THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · Railway Official Gazette

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Annual subscription £4 10s. 0d. post free. Single copies, Two shillings
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 95] FRIDAY, DECEMBER 21, 1951 [No. 25

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British Railways Coal and Steel Carryings

THE increased output of the coalmines in the last few weeks has been illustrated in the coal carryings of British Railways. During the 48 hours ended at 6 a.m. last Monday, 463,560 tons were conveyed from deep-mined pits and opencast sites—a record. The total amount of coal conveyed from pitheads last week was 3,332,000 tons, the highest since May, comparing well with 3,326,000 tons during the corresponding week of 1950, and probably a record since 1940. Total coal production last week was 4·9 million tons, about the same as in "Dunkirk Week," 1940—though the latter was entirely of deep-mined coal—and otherwise the highest output recorded. No indication was possible at the time we went to press of the areas in which coal production has risen most sharply; nor was there available any analysis of the railways' most recent coal carryings by Regions. To judge by the British Transport Commission statistics for the four-week period ended November 4, coal traffic originating is likely to have increased most in the Western Region. The bulk of traffic from pitheads in that Region originates in the South Wales coalfields, and if the recent trend in production has been continued in the miners' spurt in the last few weeks before Christmas, coal despatches from South Wales will have contributed largely to achieving the record. Elsewhere in this issue are discussed the factors which made the record movement possible. If relatively favourable weather last week helped railway operating, weekend working in the pits has complicated the task of clearing wagons, so that the more credit is due to the railwaymen. In addition to coal carryings, iron and steel traffic has been heavy in recent weeks. The latest figures show for the week ending December 8 a total of 198,681 tons conveyed from principal steel works—a slight decline compared with the preceding week. In general, this traffic varies directly as to steel production. It is, however, only a small proportion of total mineral traffic, which has been increasing steadily in recent months, reflecting increased industrial activity. In view of the shortage of staff this reflects the greatest credit on all operating grades.

Steel Supplies

THE rate of steel production in the United Kingdom in November was some 16·4 million tons a year, compared with 15·6 million for October, and 17·5 million tons a year for November, 1950. This brings aggregate output for the first eleven months of 1951 to 14·5 million tons, against 15·1 million to the end of November, 1950. It is hoped now to produce some 15·6 million tons this year, as the raw material shortages have precluded achievement of the 16 million tons previously expected; to reach the revised objective, it is necessary to produce during this month at the rate of some 14 million tons, which should be possible in view of last December's output at the rate of 15·4 million. In view of the intensified requirements of industry apart from rearmament, the smaller output, compared with last year, is disappointing, though it was possible last year to import from Germany much scrap which is no longer available. The present output can be increased only by using more iron ores, British or imported; this depends largely on the availability of coke supplies and on the rapid development of overseas sources of iron ore. Meanwhile the Steel Economy Committee, which was established by the Labour Government, is examining methods of economy in the use of steel.

C.I.E. Seeks New Capital

CORAS Iompair Eireann has sought authority to raise new capital of £2,500,000 to meet its deficit. This was made known by the Dublin Minister for Industry & Commerce last week when the Dail voted £2,230,000 to cover C.I.E. losses, which were £1,400,000 on the railways and £31,000 on the canals in the past year. The Minister said that "quite substantial" capital would be needed if efficient transport services, not requiring subsidies, were to be provided. He had asked the company for a statement of policy, indicating what steps it had taken to curtail operating losses and what economies and reorganisation proposals it could put forward. It is clear that the rates increase of September will not enable the undertaking to pay its way, and that a further increase would merely drive away traffic. The question of branch lines in the Republic has long been contentious and it is encouraging that, as the Minister announced, a board is to be set up to which application to abandon branches may be made. This is one step towards the Minister's avowed aim of putting the company in a position to make a profit by enabling it to operate on a commercial basis, shorn of unremunerative services.

Institute of Transport Annual Report

EVERY year since 1941 the membership of the Institute of Transport has shown a net increase. The report of the Council for the twelve months ended September 30, 1951, gives the number of corporate members as 2,731 and non-corporate members 6,105, these figures comparing with 1,870 and 3,083 respectively ten years ago. For the year under review expenditure exceeded income by £944 as against £48 last year and £1,768 for 1948-49. Sharply rising costs made it impossible to maintain the improvement effected last year. Further steps taken to safeguard the finances include an increase in entrance fees and the imposition of an entrance fee for students. Entries for examinations were again high. During the twelve months courses for port workers were introduced and the Council has agreed to act as the moderating body for examinations to be

held under the scheme. The report records appreciation of the work of the Standing Committees and of the help received from the transport press. The amount standing to the credit of the Premises & Development Fund is now more than £73,000 and members are asked to assist in raising the balance of the £100,000 originally set as a target.

Bombay Central Station Comes of Age

THE 21st anniversary of Bombay Central, the long-distance terminus of the Bombay Baroda & Central India Railway (now part of the Indian Western Railway), occurred on December 18. As recorded on one of the two brass commemorative tablets fixed in the entrance hall, and which are reproduced elsewhere in this issue, Central Station is the fourth B.B.C.I.R. terminus in Bombay. The first terminus, Grant Road, north of the present station of that name, was opened in 1864. After the line had been extended some five miles to the southernmost part of the island, Grant Road was succeeded by Colaba Causeway Station, near Sassoon Dock, opened in 1870. Accommodation there was limited and another, unpretentious, station was opened in 1893 at Wodehouse Road, nearby. The Back Bay reclamation scheme, and the quadrupling of the line between Grant Road and Borivli and growth of traffic as a result of electrification, necessitated a new station for main-line trains. The Colaba line was cut short at Church Gate Street, which then became the terminus for suburban trains. The foundation stone of the new Central Station was laid on March 11, 1929, and the opening ceremony was performed on December 18, 1930. The traffic has increased still further in two decades and may now be said to justify the ample accommodation, which consists of four through and five terminal platforms.

Special Wagons for Iron-Ore Traffic

AN interesting feature of a new type of mineral wagon designed by British Railways is the provision of four side-discharge doors which can be operated throughout an entire train simultaneously by compressed air. Cylinders fitted to the wagons for the automatic opening or closing of the doors are charged by the locomotive while the train is in motion and operation is controlled from the engine footplate. Corten steel is used in the construction of the wagons as a safeguard against atmospheric corrosion and to enable them to withstand severe abrasive action. These wagons, which have a tare weight of 28 tons 13 cwt. and are carried on two four-wheel bogies, will take 56 tons. They will be the largest mineral wagons built for British Railways as yet. Power and hand brakes are provided and the doors can also be operated individually by levers. Other particulars are given elsewhere in this issue. Thirty wagons are being built by British Railways at Shildon Works to meet the special requirements of this traffic from Tyne Dock to Consett steelworks and they will transport about 1¼ million tons a year. The first train is expected to be in service by the Spring of 1952.

Chromium Steel Rails Experiment

THE decision of the Railway Executive to experiment again with chromium steel rails is of interest, especially as bearing on the editorial note in our December 1, 1950, issue, that at the Rome International Railway Congress of that year no reference was made in the reports to any attempt to improve the wearing quality of the steel rail. At various times there have been sporadic attempts to popularise the chromium rail in Britain; in particular, the North Eastern Area of the former L.N.E.R. between the wars became as much an advocate of chromium rails as was the Southern Area of the same company of more recognition of the properties of manganese and heat treatment by the sorbitic process. The latter, afterwards adopted by the L.M.S.R. and the Southern Railway, became discredited because of the irregular surface hardening developed by sorbitic rails, leading to noisy running. Experiments on the L.N.E.R. showed that chromium rails also were not immune from irregular surface hardening in heavily trafficked locations. The development of this defect should be a spur to further experiment rather than a justification for the abandonment of a valuable toughening process. It will be a loss to progress if further tests with chromium rails are not accompanied by companion experiments with heat-treated rails.

The Lartigue Electro-Semaphore Block

THE Lartigue electro-semaphore block, referred to by Monsieur J. G. Walter, Chief Signal Engineer, S.N.C.F., in his recent paper to the Institution of Railway Signal Engineers, has always been rather a puzzle to British railwaymen. This type of semaphore is simply a block signal with no connection with the points and performing no ordinary interlocking functions. We would regard it here as a 2-position block instrument, standing normally at "clear," as with the Preece apparatus on the former L.S.W.R., but so large that the driver can see it. Once this is grasped there is no difficulty in following the working, which has the advantage that any train change, such as stopping it out of course to detach, has no effect on the block working and causes no unnecessary use of cancelling facilities. The block semaphore is not interfered with when such a movement has to be made. The first form of the Lartigue apparatus appeared on the Nord in 1875, but was much improved by the addition of succession locking between the rear and advance sections, and electric locking between that and the warning approach signal. On the Nord it was first a red disc outer signal, but during the 1914-18 war a special centrally-balanced arm signal was adopted and installed generally from 1919.

French Definition of "Block System"

IN replying to questions about the new S.N.C.F. standard double-line block, Monsieur Walter remarked that this was used where there had been no block previously. This did not mean that those lines were not worked on the space interval principle. The expression *block-système* is used in France to mean apparatus with some degree of dependence on interlocking between the mechanism actuated by the signalman and the outdoor signals; in other words, at least a partial "lock-and-block" action. If something like a plain block telegraph is involved, then *cantonnement* is used. This custom, paralleled in Germany by the term *Streckenblock*, has often given rise to misunderstanding and confusion. After the accident at Lagny in December, 1933, the then Eastern Railway management gave press interviews, leading to reports in English newspapers to the effect that there was still a large mileage in France not equipped with any block system and conveying an erroneous impression. When considering any statement about block working in other countries, one has to make quite sure what is meant, and whether the space interval principle is observed, which is really what block working means in Britain regardless of the apparatus used.

Locomotives for West Africa

IN the near future the Gold Coast Government Railway will take delivery of 30 locomotives built by the Vulcan Foundry Limited. Two of these have been delivered already and tests are being conducted by the railway authorities in the Gold Coast; the remainder are expected to be delivered before the end of the year. The engines, which are described and illustrated elsewhere in this issue, are required to cater for increased traffic, and they have been designed for mixed-traffic operating. They are of bar frame construction and fitted with cylinders 18 in. dia. by 24 in. stroke. Steam distribution is effected by trunk type piston valves actuated by Walschaerts valve gear. British Timken roller bearings are fitted to all engine and tender axles; those for the coupled and engine bogie axles are of the cannon type. Roller bearings are also fitted to the connecting rod big ends and coupling and eccentric rods. These locomotives are claimed to be the first to be built in the United Kingdom so equipped. They are also the first engines fully equipped with roller bearings to be built for service on a Colonial railway.

The Freight Traffic Situation

THE improvement in the position of freight traffic and the reduction in wagon standage as compared to a year ago give cause for satisfaction, although it is far too early to be optimistic as to the course of traffic during the winter, the worst months of which are ahead. At the end of 1950 the operating position was grave. The prevailing manpower shortage in operating grades was aggravated by inclement weather and an epidemic of influenza; in addition, the coal shortage, which interacted on the working of coal trains and wagons, necessitated curtailment of passenger services in the late winter and in the spring of 1951; the latter was effected by phases, but, although the consequent economy in coal undoubtedly helped the situation, and the cuts in train mileage were arranged to leave all important services intact, there was a good deal of public criticism of the railways. Operating staffs at all levels put in long hours of work, which in the case of outdoor grades depleted by sickness demanded a devotion to duty that has not been accorded due recognition. It was necessary to postpone the introduction of the summer passenger timetable by a fortnight—again at the price of public criticism. The high level of freight traffic occasioned by increased production and alterations in the trends of traffic, did not allow of any substantial improvement in the situation until late in July.

Last summer, it was apparent that if serious congestion of freight traffic was to be avoided during the current winter, more drastic measures were necessary. To enable outstanding traffic to be worked off, passenger train-mileage was cut by the introduction of the reduced winter timetable a fortnight earlier than planned, to allow of a clean start. This did much to help, notably by making engine crews available, but proved unlikely to be sufficient. In addition, there was much weekend working by all grades concerned. Meanwhile, to obtain some assessment of traffic prospects, the Railway Executive Traffic Committee was set up, consisting of Messrs. V. M. Barrington-Ward, David Blee, and W. P. Allen, Members of the Railway Executive respectively for operating, commercial, and staff matters, and of Mr. K. W. C. Grand, Chief Regional Officer of the Western Region. The committee was given full powers to examine the freight traffic position and take appropriate measures. Mr. Grand was authorised to take the initiative in all Regions in collaboration with the Chief Regional Officers, and was assisted by a working party of senior representatives of the departments concerned. The committee took account of the total shortage of some 30,000 men in operating grades, and of the expected growth in traffic compared with 1950-51, and estimated that the physical number of locomotives and wagons would be sufficient—as has proved to be the case—but that further steps, including further diversion of traffic, would be necessary.

Accordingly, in October, the British Transport Commission drew up its comprehensive plan for movement of freight both by rail and road. The plan, which was outlined in our October 12 issue, has involved the establishment in each of the 51 railway districts of a local Joint Committee, comprising the Railway District Commercial Superintendent, the District Manager of British Road Services, and representatives of railway users. These are responsible to a Winter Transport Central Joint Committee, which in turn is subordinate to the Central Winter Transport Conference, under the chairmanship of Mr. F. A. Pope, a Member of the B.T.C., with the Railway Executive represented by Mr. Blee.

This measure of co-operation, however, between transport users and nationalised railway and road haulage services is only supplementary to what British Railways themselves have effected. The curtailment by a fortnight of the summer passenger train services made available many train crews—up to 650 on a Saturday, for which reason it was well worth a certain loss of goodwill. A system of diversions has been brought into use, lightening the burden of traffic at places such as Banbury and in the Birmingham area, where the attraction of other industries has greatly aggravated the railway operating manpower position. Many of these routes were used during the war and on previous occasions when congestion demanded. Traffic plans have been reorganised so as to make up block loads for destinations and marshalling yards and to avoid intermediate yards affected by staff shortages. Engine and train-crew workings have been reorganised so as to transfer duties from depots short of staff, as for instance on the East Coast main line.

The situation in and near London, Birmingham and other localities affected by shortage of operating staff has been eased by assisted lodging schemes; additional hostel accommodation also is being provided. Traders and other railway users are being encouraged to clear wagons promptly —including those delivered on Sundays, even when they work only a five-day week—and to plan loading and despatches to fit in with the operation of goods train services. Besides this, the Road Haulage Executive, before the formation of the B.T.C. winter transport plans mentioned above, has for some time worked in close co-operation with British Railways, traffic being road-borne wherever circumstances demand. The National Coal Board has been consigning by road some 120,000 tons of coal a week. During the five weeks to November 24 10,000 tons of miscellaneous traffic, normally rail-borne, has been diverted to road vehicles of the Railway and Road Haulage Executives. Coastal shipping also has been used to relieve the railways.

Schemes have been prepared for the curtailment by phases of the winter passenger train mileage, already some 3 per cent. less than last winter. The first phase was brought into operation in all Regions at the end of October, releasing for freight working some 120-130 further train crews daily. Further phases can be effected rapidly in one or more Regions as circumstances demand. As in the case of previous passenger train reductions, the selection of trains is left generally to the discretion of the Regions.

The outcome of these measures is that now, with the winter nearly half over, the freight traffic situation is much improved compared with a year ago. The latest available figures show that merchandise, mineral, and coal tonnages conveyed up to some seven weeks ago were almost the same as in 1950; and the latest indications are that the recent increase in coal output has brought more recent tonnages some way above those of last year. Congestion and delays, on the other hand, have been much lessened. Thus the number of wagons held up in South Wales—always a black spot because of its few outlets to other districts — has averaged 3,600 weekly so far this month, compared with 5,200 weekly in November and 10,000-12,000 weekly a year ago. Some indication of success in handling freight traffic is given in the figures of goods trains run—an increase of 4 per cent. in a year—from South Wales reproduced and commented on in our November 23 issue.

The improvement in the situation was caused partly by better weather as compared with the autumn and early winter of 1950, despite floods in November. The incidence of sickness also among operating staff so far has been lower than last year, and there has been no epidemic of influenza. From an administrative viewpoint the headquarters planning has been justified. The most important factor of all has been the industry and devotion to duty of the staff concerned in operation—and at all levels. Much overtime has been worked, not only by train crews, shunters, and so on, but also by control staff, and the staffs of the operating departments at District and Regional headquarters. The latter have been called on to work on planning as well as on the statistical and routine clerical work. While much has been said in the Press and on platforms regarding the industry shown by the coal miners and their self-sacrifice in working at weekends, little recognition has been accorded the railwaymen without whose achievement in moving coal the miners' efforts would have been unavailing.

The outlook for the remainder for the winter is uncertain. Severe weather may slow up freight movements, and the depleted operating staffs may once more be thinned by influenza and other sickness. Much of the success so far achieved is due to the railways starting the winter with a clean sheet in the matter of traffic backlogs and wagon standages, and this is due largely to the hard work of operating staff, planners, and officers, and to the foresight of senior officers who took precautions in time.

Colonel Wilson's Annual Report

IT was hardly to be expected perhaps that the record of 1949 would be repeated, and that another whole year would pass without one passenger losing his life in a train accident on British Railways. We find in the annual report for 1950 of the Chief Inspecting Officer of Railways, Lt.-Colonel G. R. S. Wilson, to which we referred briefly in our issue of November 16, that eleven fatalities fall under that heading, and that in addition eight railway servants and 21 other persons were killed in the same class of accident, which totalled 1,156 against 1,176 in the previous year; of these, 23 were attended with fatal results. The passenger fatalities were accounted for by two collisions and one serious train fire, which, like the one recorded in 1949, attracted a great deal of attention. There were only 51 cases of serious injury in these accidents which is a very low figure when the amount of traffic is taken into consideration. There has in fact been an improvement in the overall casualty figures, itself evidence of safer operation, but, as the report points out, regard must be paid to the steady decline in passenger traffic since the war.

The jurisdiction of the Minister of Transport as regards all past regulatory Acts of Parliament affecting safety was left completely unchanged by nationalisation, and the methods of reporting accidents remain as formerly. The failure of the human element, and that mistakes of signalmen accounted for only 16 of the collisions and 18 of the derailments, while train crews were primarily responsible for 124 and 39 respectively. Misconduct of the public itself was responsible for 178, or 15 per cent., including 60 collisions with vehicles at crossings, which gave rise to 14 fatalities. The remainder amounted to 118 and, besides fires in trains, included cases due to opening carriage doors which came into contact with other vehicles or structures. It was necessary, as in 1949, to hold 18 formal inquiries, the reports on which, generally with a diagram, have appeared in shortened form in these pages. Their leading features were as follow:—

At the Second Drove Crossing on January 3, 1950, on a dark night, a passenger train travelling at speed wrecked a private car following a motor lorry across. The two occupants were killed. The crossing keeper had failed to keep the gates locked, and the lorry driver had opened them without authority. The car driver must have thought the attendant to be present, and that it was safe to cross. Slack supervision by stationmasters was brought out at the inquiry. Confusion in the mind of a gatekeeper, as to which was the up and which the down line, led to gates being opened at the East Shalford crossing on February 1, after a train had passed when there was another approaching from the opposite direction. Here, again,

—	Collisions	Derailments	Running into Obstructions	Fires in trains	Miscellaneous	Total
1. Failure of train crew (including guard) :—						
(a) Passing signals at danger	27	15	25	—	—	67
(b) Other irregularities or want of care	97	24	22	—	2	145
2. Failure of signalman :—						
(a) Irregular block working	5	1	—	—	—	6
(b) Other irregularities or want of care	11	17	10	—	—	38
3. Failure of other operating staff	41	20	71	1	10	143
4. Failure of train crew and/or signalman and/or other operating staff	57	29	26	1	4	117
5. Faulty loading	1	—	—	1	—	2
6. Technical defects :—						
(a) Engines	3	14	—	3	—	20
(b) Vehicles :—						
i. Drawgear	12	21	—	—	—	33
ii. Other items	3	35	—	2	5	45
(c) Track or signalling apparatus	5	44	2	—	4	55
7. Other causes :—						
(a) Snow, landslides, floods	—	—	5	—	—	5
(b) Animals on the line	—	—	98	—	—	98
(c) Misconduct of the public	60	1	65	28	24	178
(d) Miscellaneous	24	18	38	112	12	204
Total	346	239	362	148	61	1,156

number of passenger journeys in 1950 was 1,613 millions, or 1·3 per cent. below the figure for 1949, and passenger-mileage decreased by 4·2 per cent. from 24,958 to 23,898 million. Freight traffic, on the contrary, continued to increase, and freight ton-miles rose by 0·6 per cent., amounting to 22,135 million. A point to be noted is that the staff employed at the end of the year was 627,813, compared with 648,458 at the close of 1949. While the decline is partly due to "economies resulting from unification there is a very considerable unwanted decrease in the operating and permanent way and signal maintenance grades. This arises mainly from the difficulty in recruitment to replace the normal wastage of these key men and it represents a very serious problem for the railways."

Route-mileage also declined, mainly on account of the closing of unremunerative branch lines, and there were also decreases in the mileage of running track and sidings. There has been continuous improvement since 1947 in the number of train accidents, but the rate of improvement has been affected by the greater number of cases at level crossings. It is true that the great majority are minor cases, but "train accident casualties are the ultimate criterion of safety in operation," says Colonel Wilson, "when they are considered over the years, and the records of 1949 and 1950 do not compare unfavourably with prewar figures."

Failure of the Human Element

Analysis of the causes of this kind of accident shows that 44·8 per cent. (50·5 in 1949) were brought about by a motorcar was wrecked and its two occupants killed. Both the crossing keeper and the nearby signalman, to whom she telephoned, were inexperienced which led to verbal misunderstanding, while the working instructions for this crossing were not clear, which led to all such instructions throughout the country being reviewed. It was recommended that 3-position block should replace 2-position as soon as possible, so as to enable indicators to be placed at the crossing.

A serious case of signals being missed in fog took place at Witham on March 7, when a fast passenger and mail train collided at about 60 m.p.h. with a goods train moving slowly forward. The fog had become worse during the night, and fogmen had been sent for, but evidence as to whether it was bad enough to require double-block working in the absence of the men was conflicting. The express driver was travelling too fast under the prevailing conditions and it was considered that the signalman should have instituted double block and had seriously misjudged the fog density. There were no definite fog markers, and local fog working instructions were not altogether clear. The preventive value of automatic train control was brought out by this case.

Another level crossing accident took place on April 29, at Boarer's Manor Way, when an electric train ran down a lorry, killing one occupant. Visibility was about 400 yd. in the rain and the line straight for a considerable distance. The lorry driver failed to notice that it was unsafe to cross and went over only 50 yd. in front of the train, being preoccupied probably with another one farther away, and

thinking he had sufficient time. The crossing leads to a gipsy encampment and has been a constant source of trouble. It is impossible to padlock the gates or make people close them. If the encampment is allowed to remain the crossing requires to be equipped as a public one to ensure adequate protection.

More than one accident during the year drew attention to the condition of certain sections of track. At Clipstone, on May 12, a passenger train became derailed, primarily owing to the condition of the line, although engine defects probably contributed, as some of its springs were broken, and this had been booked for some months without attention being paid to it. This case brought out the need for one department, when deciding on the urgency of repairs, to consider the possible effect of deficiencies on another's work. Later, at Mansfield on September 2 and Kirkbride on October 23, complete derailment of passenger trains resulted. The former case was attributable to a combination of track and engine defects. There were regular cross-level variations and excessive uncontrolled side-play in the trailing pony truck. The type of engine was more than usually sensitive to track irregularities, and several adverse factors combined to produce dangerous conditions at normally safe speed. In the other case it was found that engines were prone to roll while on the branch concerned, the class involved particularly so. Irregularity of cross-level and other factors set up severe lateral oscillation and rolling, and it was held that an inspector should have imposed a speed restriction. The classification of the line as " very good " not long before was remarked on in the report, as the accident was definitely caused by the bad state of the track.

There were two cases of seriously irregular block working and failure of the human element, namely, at Whitehouse West Junction on May 13 and Wortley West Junction on December 2. In the former, a passenger train ran into a waiting light engine, resulting from grave negligence by a signalman, who had assumed the engine had gone, while, as he admitted, he had not seen it or its tail light pass. There were irregular entries in his register, and supervision was considered to have been insufficient. The light engine driver had failed to carry out Rule 55. In the other case, there was again very irresponsible action on the part of a signalman, who sent a train forward wrongly, after a telephone message about frozen points. Later, he offered another train, but the purpose of the signal was misunderstood at the box ahead, and a collision resulted. The desirability of pressing forward with the block modernisation programme, curtailed by expenditure restrictions, was emphasised in the report. A derailment at Tollerton on June 5, which was a very hot day, was brought about by distortion of the track, somewhat deficient in ballast. The fishplates, although oiled, had " frozen " to the rails as the bolts had not been slackened. The ganger was held mainly responsible, as he had not taken the necessary hot weather precautions, and the inspector had removed the gang without satisfying himself on that point. It was recommended to amplify the general instructions to make it understood that weak sections of line should receive early attention, or speed be restricted if that was not possible. The factors affecting free rail expansion were reviewed in the report. It was suggested that on long automatic signalling lengths means should be provided of placing signals at danger in emergency.

What could be considered in some ways as the most serious case of the year was the fire in a train at Beattock on June 8, which destroyed two coaches down to floor level. Prompt, praiseworthy action by trainmen, a ganger, and others confined the outbreak to these vehicles. Five persons lost their lives, all in one compartment. There were no witnesses as to how the fire started, but the train communication was undoubtedly actuated by one of the victims, killed instantaneously by an explosion of hot gases. The outbreak probably started in a compartment closed up and empty for some time. There was no previous record of exactly the same circumstances having occurred in railway carriages, and it was recommended to design them in future in such a way as to enable all rubbish to be cleaned away from under the seats, where the fire was considered to have begun. The design of passenger coaches in relation to fire risks was reviewed in broad terms, and the question of fire fighting training was raised.

At Edgware Road on July 1, the leading bogie of an electric train took one line and the following one the other, as the points were moved under it by a serious lapse on the part of a man working the frame, who put the home signal to danger and set the points in motion before the rather short backlocking track circuit had been reached. This control was at once lengthened. The amount of overlap also came in question and it was recommended to consider generally on the London Underground lines approach speeds and overlap lengths. On August 27 a very serious collision occurred at Penmaenmawr, with great damage and many casualties. There were no ground signals, and the movements made by a light engine in crossing to the up line in order to go into the yard were not quite definitely established. There was a dispute also about the giving of whistle signals, and some doubt likewise as to whether the young signalman had been sufficiently instructed regarding the meaning of an important rule, the wording of which was recommended to be revised to remove all chance of misunderstanding. The renewal of the signalbox in a better position with ground signals and track circuiting will render the working there much more secure. The position at all similar places is being reviewed. On August 28, at Northolt Junction, a goods train was travelling at 25 m.p.h. when the little-end of an inside connecting rod became disconnected and caused such damage to the engine as to lock its wheels. The boiler was pierced. A nut had come off a gudgeon pin and had been fitting loosely for some time. This should have been discovered before the engine left the shed 60 miles away, and a fitter and driver were held to have been negligent. A new design of crosshead had been fitted to new engines since 1947, and the replacement of the old pattern generally was recommended.

Another unfortunate level crossing accident occurred at Hopworthy on September 7. A tractor and trailer were wrecked, with fatal results. The driver thought he had heard the train pass and moved across close in front of it. The risks at the crossing were such that it was recommended to get it closed or to instal a telephone to the nearest signalbox. At Court Sart Farm crossing, on October 9, a train struck a heavy lorry, whose driver had misjudged the width of a gateway. He knew of no telephone being there, neither did regular users of the crossing. It was recommended that the existence of one should always be conspicuously indicated and that owners of abnormal vehicles be required to notify the railway authorities before sending them over a crossing.

The last case of a formal inquiry related to a collision between a passenger train and a light engine at Throstle Nest on December 27. Two signalmen wrongly believed the engine to have been cancelled on the describers and failed to see it pass. It stood for some 16 min., without Rule 55 being observed, beyond the limit of the track circuiting, which it was recommended to extend, while improving the train describer cancelling arrangements and applying modern block controls, and so on, in the neighbourhood.

In addition certain accidents were dealt with by correspondence. One derailment was noteworthy in that a broken coach axle was found to have been 75 per cent. flawed and that supersonic tests had failed to reveal it. Brought into use in 1947-48, such tests had led to a considerable decline in breakages of carriage axles, and this failure to reveal a flaw is being thoroughly investigated. Another case of special interest was that at Auchtermuchty, where a 50-ton motor vehicle broke through an overline bridge. Its movements should have been governed by the Motor Vehicles (Authorisation of Special Types) Order, 1941, but had not been notified to the Railway Executive.

There was a decline in total failures of engines and rolling stock, due to a marked reduction in broken tyres, but the axle failures rose, the great majority on wagons. Only two carriage axles failed. Nearly all fractures occurred at the point of stress concentration at the inner

edge of the wheel seat, due to the development of flaws very difficult to detect by ordinary means. Broken rails showed no improvement, and other failures of track and structures were at much the same level as in 1949. A rise in derailments attributable to track defects was probably a reflection of the serious shortage of manpower for day-to-day maintenance, as there were no serious deficiencies in the renewal programme. The total number of failures of engines, rolling stock, coupling apparatus, rails, and permanent way items and structures came to 3,609, against 4,062 in 1949. Yearly averages for 1946-50 and 1935-39 had been 4,382 and 4,149. "The continuing decline is mainly due," says the report, "to the reduction in coupling failures, as old and obsolete wagons are withdrawn, mostly from the former private owners' fleet."

Level Crossings

There are four kinds of level crossing, namely, public with gates, public without gates, occupation with field gates—including those of private and accommodation user—and footpath. The number of the last named is not given, but there are 4,450 public crossings—370 without gates—and 22,600 of the occupation type. There were 235 accidents in all at these places, 35 more than in 1949, only two more than the 1946-50 average. Of these, 211 were "train" accidents, 16 being fatal, involving collision with gates or vehicles at public road and occupation crossings, compared with 165 in 1949. It is to be noted that since 1858 gates closing alternately to rail and road have been obligatory at public road crossings, but some of the older types of crossings remain without them. Modernisation has become highly desirable.

Notwithstanding the considerable increase in the number of accidents, there was fortunately no equivalent rise in casualties. The total of 89 (35 killed and 54 injured) compares with 83 (42 killed and 41 injured) in 1949. The average for 1946-50 was 94. The risk at properly equipped gated crossings can be ignored, compared with other road risks. At the occupation crossings safety depends primarily on the users' care and vigilance, but the risk of a serious derailment is far from negligible in these days of motor transport. Colonel Wilson observes that "the main anxiety, however, arises at those occupation crossings, such as Boarer's Manor Way, where serious risks have developed in the course of years through alteration in character and extent of the user, while the law still lays no specific obligation on any of the parties concerned to provide and pay for the added protection which the increased risks demand. The whole conception of such crossings was reviewed by the British Transport Commission at the request of the Minister of Transport, and their report is under consideration in the Department. The question is complex and formidable, and consultation with many other authorities will be required, but the problem is urgent and, in the interest of safety of road and rail users alike, its solution should not be delayed."

Movement Accidents

What are called "movement" accidents are chiefly of interest in connection with mishaps to railway servants, as in almost all cases where passengers are involved, they arise from the individual's own want of care, or failure to exercise proper control over children travelling with them. There were in all 179 railway servants killed and 2,363 injured in 1950, comparing favourably with the 1946-1950 average, but there has been little difference in the number of fatali-

CASUALTIES IN TRAIN AND MOVEMENT ACCIDENTS

—	Total	Killed				Injured				All casualties per million train miles	
		Total	Passengers	Railway servants	Other persons	Total	Passengers	Railway servants	Other persons	Killed	Injured
1915–1919 ...	6,122	616	174	341	101	5,506	1,731	3,600	175	1·8	16·5
1920–1924 ...	6,638	407	92	248	67	6,231	2,577	3,518	136	1·1	17·0
1925–1929 ...	7,526	368	91	210	67	7,158	3,733	3,267	158	0·9	18·0
1930–1934 ...	7,440	308	74	183	51	7,132	4,394	2,592	146	0·7	17·0
1935–1939 ...	8,376	338	86	198	54	8,038	5,342	2,576	120	0·8	18·0
1940–1945 ...	1,222 (1)	477	141	254	82	745 (1)	256 (1)	455 (1)	34 (1)	1·2	1·9 (1)
1946–1950 ...	8,878	347	91	204	52	8,531	5,647	2,763	121	0·9	21·2
1946	9,529	413	120	236	57	9,116	5,691	3,281	144	1·0	22·6
1947	9,203	409	148	218	43	8,794	5,871	2,785	138	1·1	22·9
1948	8,683	340	87	191	62	8,343	5,554	2,678	111	0·9	20·9
1949	8,651	285	44	188	53	8,366	5,640	2,625	101	0·7	20·2
1950	8,329	290	60	187	43	8,039	5,483	2,466	110	0·7	19·5

(1) Serious injuries only

ACCIDENTS, EMPLOYMENT, AND OPERATING STATISTICS

—	Class I		Railway servants (March)	Passenger journeys originating (incl. season tickets)			Freight-tonnage originating (excl. free hauled)	Ton-miles (incl. free hauled)	Miles operated				Passenger-miles (estimated)	
									Main line railways			London Transport: Train		
	Train accidents	Failures of rolling stock or permanent way		Total	Main line railways	London Transport			Train	Shunting	Other		Main-line railways	London Transport
	Number		Thousands	Millions										
1920–1924 ...	1,009	11,153	699 (2)	1,848	—	—	303	17,457	369	121	28	—	—	—
1925–1929 ...	941	9,141	679	1,661	—	—	298	17,562	401	123	29	—	—	—
1930–1934 ...	796	5,772	602	1,612	—	—	270	16,060	416	113	27	—	—	—
1935–1939 (1) ...	745	4,149	592	1,733 (3)	1,255 (3)	478 (3)	281	17,230 (3)	412	115	29	32	18,993 (4)	2,297 (4)
1940–1945 (1) ...	387	160	604	1,661	1,210	451	288	23,844 (5)	356	124	37	26 (6)	33,191 (7)	2,608 (7)
1946	1,237	5,162	652	1,855	1,266	589	262	20,639	373	116	36	30	29,231	3,029
1947	1,388	4,679	660	1,714	1,140	574	257	20,190	355	113	35	31	23,015	3,095
1948	1,293	4,398	703	1,646	996	650	276	21,502	366	112	41	34	25,093	
1949	1,176	4,062	648 (8)	1,634	993	641	280	22,010	381	109	41	34	24,958	
1950	1,156	3,609	628	1,613	982	631	281	22,135	384	105	40	34	23,898	

(1) Having regard to the altered basis under the Modification Order, fewer accidents were reportable and only serious damage is included as from September 1, 1939, to December 31, 1945. The comparison is unchanged as regards traffic, movement and staff employed
(2) Four years, 1921–1924
(3) Four years, 1935–1938
(4) For year ended August, 1939, only
(5) Estimate for main lines—1942–1945
(6) Loaded only
(7) Three years, 1943–1945
(8) Railways and London Transport Executives Staff only

ties for the past three years. It sometimes happens that protection afforded to men working on the line is inadequate, often due to some temporary circumstance such as fog, or some particular condition. Occasionally, contractors' men will start work without waiting for a lookout man, with serious consequences. Failure to act correctly after a warning or lack of care on a man's part, or on the part of others, accounted for 67 cases— a noticeable general improvement—which nevertheless involved 20 fatalities and eight cases of injury resulting from neglect to comply with Rule 234(*a*) and move clear of all tracks when a train is approaching, so that in this particular respect there was actually a deterioration compared with 1949.

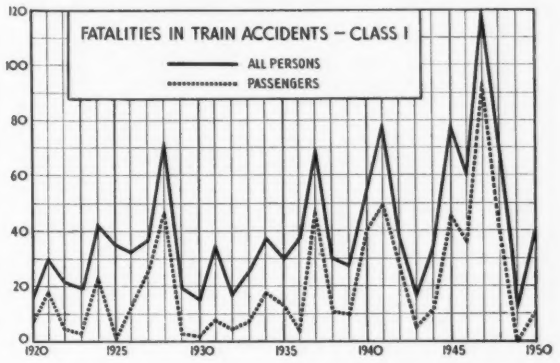
In one bad case two men, after receiving warning of an up train, stood on the down line and were killed there. Colonel Wilson points out that, once a man has received a warning he becomes responsible for his own safety, and observes that " it is difficult to understand why this rule, which is clear in its warning and purpose, continues to be disregarded by those people whose lives and limbs may depend on it. Better education and example by the supervisors would doubtless have beneficial effect, as there are indications that this may leave something to be desired. It is noteworthy that nearly half the casualties due to disregard of this rule were to gangers and sub-gangers, who should be particularly careful to set a correct example, as it is their duty to read the rule to gangs from time to time and impress them with its importance. While these senior men in the gangs are primarily responsible for the safety of the men working under them, as is only right, it is also the duty of the district permanent way inspector, when visiting the gangs, to see that all unnecessary risks are avoided.

It appears that this part of his duty does not always receive the attention it deserves, and that the ganger, who should be able to look to the inspector for guidance in this matter, is not always given sufficient encouragement and support, nor indeed the admonishment which may sometimes be needed. This view is largely based on the attitude of some inspectors during inquiries into accidents, especially when the employment of a lookout man is in question. These accidents are most regrettable, and every permanent way inspector should regard a casuality to one of his men as a discredit to his district, and guard against it by every means in his power, bearing in mind also that proper maintenance of the track depends to a large extent on the well-being of the men who do the work. If that spirit can be aroused and maintained I am sure that a considerable and lasting reduction in accidents to permanent way men will be achieved."

The need for constant care is strongly brought home also in the case of accidents to staff walking or standing on the line, and the temptation to take a short cut between vehicles without precautions causes many regrettable accidents to many men. Shunting, which must necessarily involve some risk, also brings its quota of cases arising from disregard of rules and instructions. Reviewing the whole position Colonel Wilson considers that if station and yardmasters and others " were more insistent on the safety rules being observed during the daily routine there is no doubt that the 1,300 movement accidents to traffic staff would be materially reduced. Similarly, there are regulations which, if properly obeyed, ought to prevent many of the accidents which occur in motive power depots, and the same may be said concerning practically every department of a railway."

The report concludes with a general review of the year in which specially important matters are touched on, such as the extension of block controls and track circuiting. While signalling modernisation cannot proceed as fast as could be wished " a great deal has been done in the past two years in the completion of prewar schemes to facilitate the working of dense and concentrated traffic." This is exemplified in several important power signalling installations. In 1950, sixty-seven train accidents were attributable to signals not being observed, certain of which could have been avoided by warning automatic train control at distant signals. New equipment is being experimented with " to combine the advantages of the former G.W.R. footplate indications with those of the more modern magnetic link between track and engine, which was developed by the L.M.S.R.: as is often the case with apparatus of entirely new design, some troubles have been experienced and reliability is not yet complete, but there is every confidence of ultimate success." Failure to obey Rule 55 was a contributory cause of several collisions, and " the attention of all concerned has been specially drawn to the necessity for its conscientious observance." New wagon construction, we read, " was unable to keep pace with the expanding volume of freight traffic, and in spite of a marked improvement in the repair position, drastic curtailment of a scrapping programme was necessary during the latter part of the year." Shortage of raw materials was not a dominant factor in 1950, but " the outlook for the immediate future is not encouraging."

The most serious aspect of the report, we feel, is the attention Colonel Wilson has been obliged to direct to the " very considerable unwanted decrease in the operating and permanent way and signalling maintenance grades," which arises from recruitment difficulties and represents " a very serious problem for the railways." Some idea of its magnitude is given by the fact that at the end of the year there were " nearly 7,000 vacancies in the relaying and length maintenance gangs, or approximately 13 per cent. of their total establishment, and many length gangs were at less than half strength." These difficulties are typical of many others, all having a disturbing influence on the fortunes of the railways, which no effort should be spared to counteract as effectually and rapidly as possible, for, as Colonel Wilson emphasises, their psychological effect is something which cannot safely be disregarded.



Comparison of fatalities from 1920-1950

HUNDRED-TON ORE WAGONS.—An interesting feature of the Quebec, North Shore & Labrador Railway, now under construction to bring iron ore down from the recently discovered ore field at Knob Lake to the St. Lawrence River for shipment, is the scale on which it is proposed to work the traffic. Wagons of 100 tons capacity are proposed, and the intention is to marshal 100 wagons in a train, which will make a gross load of at least 12,500 tons. From its opening the line is to be diesel operated, and quadruple-unit locomotives of 6,400 b.h.p. are to be used. Although the maximum altitude of the main line is to be 2,250 ft. above sea level, it is being engineered in such a way that there will be no gradient steeper than 1 in 333 against loaded trains; the empty wagon trains, of a total weight probably at least 2,500 tons, will require to be worked back up ruling gradients as steep as 1 in 56. It is expected to work some 10,000,000 tons of ore over the line annually, and in view of the heavy train loads, a very substantial track is being laid, with 132-lb. flat-bottom rails. The main line will be 357 miles in length, and, incidentally, the most extensive single piece of railway construction undertaken in North America for a good many years. Because of difficult winter conditions through this desolate part of Northern Canada, which are likely to bring both mining and railway operation to a standstill, and the freezing of the St. Lawrence, it is expected to concentrate the ore traffic over the railway between May and October inclusive each year.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

French Steam Locomotive Practice

November 26

SIR,—The two articles on "Recent French Steam Locomotive Practice" in your October 12 and 19 issues made interesting reading, especially the remarks and figures on compounding. I think it might be "because of" the one (or two) new system on French compound locomotives that the high mileages are run rather than in "spite of," as this system seems to lead to their being exceptionally well maintained and thus seldom out of service. I fail to see why a similar system cannot be given a renewed trial in this country; it would seem well suited to Southern Region Pacifics, most of which work simple rosters on only comparatively short runs.

The poor quality of the coal in France tends to encourage compounding in a rather odd way because compounding means that a large, powerful locomotive can have a relatively soft exhaust, the fire thereby being kept in the firebox.

Yours faithfully,

J. B. LATHAM

18, Wheatsheaf Close, Woking

Passenger Train Punctuality

December 6

SIR,—Chronic late running on some of Britain's most important main lines, which resulted in a recent question in the House of Commons to the Minister of Transport on the unpunctuality of the Manchester-London services in particular, prompts me to draw attention to the need for a policy of time recovery on the part of the Railway Executive, with practical encouragement and incentives to make it effective.

The article by "Mercury" in the December issue of your contemporary, *The Railway Magazine*, demonstrates not only the deplorable decline in British main-line express services since 1939, but also contrasts them with the substantial recovery towards pre-war standards achieved in Western Europe; and when a comparison is made between punctuality here and on the Continent, the disparity is even more marked.

Three recent experiences of mine in France, the only ones among numerous journeys in which there has been any deviation from schedule—and in two of these the initial delays were no fault of the railway—show what can be done when a time recovery policy is enforced, and go far to explain the high esteem with which Frenchmen today regard the S.N.C.F. I was on the northbound "Blue Train" two days before the July 14 holiday, when extra traffic caused delay in the earlier stages; yet a late departure of 26 min. from Dijon was turned into a punctual arrival at Paris by covering the 195·3 miles from Dijon in 157 min. (74·6 m.p.h.) with a load of thirteen vehicles, or about 675 tons.

Two weeks ago, during the Rhone Valley floods, diversion south of Valence caused delays to northbound expresses of 60-90 min. by the time Lyons was reached. I travelled by the 13.40 from Lyons (13 vehicles, 625 tons) which left 85 min. late. A 4-8-2, of the type recently described in your journal, recovered 18 min. to Dijon, and with a standard 2-D-2 thereafter, the 99 miles to Laroche (special stop) took 80 min. (74·25 m.p.h.) and the 96·3 miles on to Paris 84 min. This last section would have been completed, but for a stand for signals near Fontainebleau, and checks outside the terminus, in about 78 min.

Finally, during last month the late arrival of the steamer at Dieppe, and a consequent late start by the train, was followed by a 15-min. gain by the latter, Rouen to Paris being covered in 81 min. (64 m.p.h. for the 86·6 miles).

And now the contrast. When I visited Northampton last week, the 9.5 a.m. from Euston, with a clear road throughout, lost 12 min. to Blisworth (62·7 miles in 90 min., with one stop at Watford), and the 2.56 p.m. up left Blisworth 20 min. late and was 40 min. down at Euston—and this despite times of 78-80 min. from Rugby to London which I have noted on odd occasions during the last three or four years. Surely these show what could be done, notwithstanding all the problems with which British Railways are beset.

But need all this be, and is there insuperable objection to following the example of our neighbours across the Channel?

Yours faithfully,

MONTCLER

L.M.R. Outer Suburban Services

November 16

SIR,—I sympathise with your correspondent Mr. Casserley in the circumstances outlined in his letter in your November 9 issue, and he is quite right to draw attention to them.

The answer, however, is not far to seek. A frequent bus and coach service is provided by London Transport over the main road which parallels the railway from Berkhampsted to Watford and therefore any loss of traffic from rail to road does not matter as the ultimate receipts will still accrue to the B.T.C. The public loses a facility, but this is one of the results of nationalisation. Ample train services are provided from Watford to London.

Yours faithfully,

C. W. HERBERT

26, Princes Drive, Harrow

Economics of Long-Distance Electrification

November 26

SIR,—Your August 24, and September 14 and 21 issues, with the contributions of Messrs. J. C. Read, H. Ofverholm and H. Charnley, have just come to hand. I fully endorse Mr. Ofverholm's reply to Dr. Read and also Mr. Charnley's remarks regarding the French National Railways. However, I have to disagree with Dr. Read's suggestions for the following reasons. Approximately 18,400 route miles (excluding electric tramways, trolleybuses, and so on), or 74 per cent. of the world's electrified railways are in Europe, including Great Britain. Of this, some round 10,000 route miles are a.c. and about 8,400 route miles d.c., the latter ranging from 600 to 4,000V.

Most electrifications have been carried out by Continental firms equally well versed in both systems. The total electrified railway mileage in Great Britain is barely 1,118 route miles, comprising essentially 600-660 V. d.c. city and suburban contact-rail systems, with a sprinkling only of 1,200 and 1,500V. d.c. electrifications, but no long-distance electrification comparable with that on the Continent exists there so far.

Mercury-arc rectifiers for traction purposes were already well established on the Continent in the early 1920s and a considerable percentage of the mercury-arc rectifiers as well as the remote-control equipment in operation on the Southern Region today is of Continental make. Furthermore, at least 146 multiple-unit motor coaches and driving trailer coaches have been supplied by Continental firms and at least another 173 made in Britain to Continental designs on a licence basis for important British lines.

The second and third points by Dr. Read have been dealt with by Mr. Ofverholm's letter, to which nothing need be added. It cannot be denied that there is a world-wide tendency to break away from d.c. and change to a.c. traction for long-distance electrifications, but the reasons are other than Dr. Read would like to make us believe.

Yours faithfully,

STEPHEN A. VINCZE

73, Karepa Street, Wellington, New Zealand

THE SCRAP HEAP

Railway Autocrats

A High Court Judge said recently of stationmasters: "Next to the headmaster of a public school they have the most independent and autocratic position on earth."—*From the "Evening Standard."*

Egyptian Railway

The engineers are actively engaged in surveying the line for the Egyptian Railway, and are in daily expectation of the arrival of Mr. R. Stephenson to decide finally the exact course to be followed between Alexandria and Cairo. Measures have been taken by the Government to procure a supply of workmen, who are to be draughted (*sic*) from the different provinces in proper proportions, and who will be liberally remunerated and fed for their labour. —*From "The Scotsman," December* 10, 1851.

Glass Sleepers

A correspondent writes that towards the end of last century glass was used for railway sleepers and tramway building. Frederick Siemens, of Dresden, made railway sleepers in glass of the same section as those made of wood, but by his process the glass was toughened, and it fractured in the same way as cast iron. The sleepers were introduced into England by H. S. Bucknall and used on the North Metropolitan Tramway at Stratford. They were moulded to fit the rails accurately; at the rail joints an iron plate was fixed on the sleeper to take the stress imposed by the passing load. Tests showed that they would bear two-thirds the traction weight of those made of first quality pine. Some of these sleepers were used on the Irish railways, where they proved most promising in the damp conditions of that country, but to railway engineers generally who in those days preferred materials of great strength, glass never became popular.

A G.W.R. Chimney Preserved

When the G.W.R. "Saint" class engine No. 2987, *Bride of Lammermoor,* was withdrawn from service in December, 1949, the chimney was saved from passing to the scrap heap, and

Chimney of a former G.W.R. "Saint" class 4-6-0 express locomotive in a Birmingham garden

Photo] [*F. C. Gilby*

now occupies a place of honour in a garden in Birmingham. The accompanying illustration shows it in its new surroundings. The chimney, which weighs 3¾ cwt., is kept in good condition by its present owner, Mr. F. C. Gilby, with an annual coat of paint. No. 2987 was built in 1905 as an Atlantic, but was converted to the 4-6-0 wheel arrangement some six years later. The engine was latterly stationed at Hereford and official records show that it ran nearly 1¼ million miles during its 44 years of service.

Window and Lighting Display

A gang of boys threw bricks at a train left in a Chessington South, Surrey, siding last weekend. They smashed 92 windows, then took out most of the electric light bulbs, and broke them on the seats.—*From the "Daily Mail."*

Prizes for Best-Kept Stations

More than 300 stations in the Scottish Region of British Railways have won awards in the best-kept stations competition for 1951. In the special class prize list awards of £6 each go to the stations at Advie, Speyside; Edrom, Berwickshire; Gleneagles, Perthshire; Glenwhilly, Wigtownshire; Kildonan, Sutherland; Lochee, Angus; and Shettleston, Glasgow. First class prizes of £5 each have been won by 49 stations, while there are 75 winners of second class prizes, and 176 have gained third class awards.

Theft of Lead Stops Trains

Thieves who stole the lead covering from 120 yards of live signal cables caused a three-hour stoppage on the Ongar-North Weald-Epping branch of the Central Line. Passengers were carried by bus. The theft was discovered by the signalman at Ongar when he could not work his levers. The stationmaster at Ongar walked up the line and found the seat of the trouble at a bridge over the line.—From "*The Sunday Times.*"

Christmas Eve

Cheer up, friends and neighbours,
Santa is on the way;
Now, for a fleeting season,
Put all your cares away.

Cheer up, engine-drivers,
Christmas Eve now has come;
Think of the happy people
You have been taking home.

Cheer up, guards and train-men,
Thundering through the night;
Surely the stars this evening
Are shining extra bright.

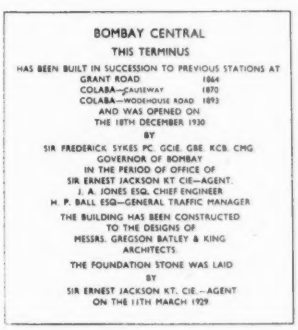
Cheer up, stationmasters,
Soon the last train will go
And you can put your feet up
Beside the fire's warm glow.

Cheer up, fog and track-men,
Let's hope the skies keep clear
Right through this happy season
Into a bright New Year.

Cheer up, everybody,
Goodwill is on the wing;
Let us be still a moment
And hear the angels sing.

A. B.

Bombay Central Coming-of-Age



BOMBAY CENTRAL

THIS TERMINUS

HAS BEEN BUILT IN SUCCESSION TO PREVIOUS STATIONS AT
GRANT ROAD 1864
COLABA—CAUSEWAY 1870
COLABA—WOODHOUSE ROAD 1893
AND WAS OPENED ON
THE 18TH DECEMBER 1930
BY
SIR FREDERICK SYKES PC. GCIE. GBE. KCB. CMG.
GOVERNOR OF BOMBAY
IN THE PERIOD OF OFFICE OF
SIR ERNEST JACKSON KT CIE—AGENT.
J. A. JONES ESQ. CHIEF ENGINEER
H. P. BALL ESQ—GENERAL TRAFFIC MANAGER
THE BUILDING HAS BEEN CONSTRUCTED
TO THE DESIGNS OF
MESSRS. GREGSON BATLEY & KING
ARCHITECTS.
THE FOUNDATION STONE WAS LAID
BY
SIR ERNEST JACKSON KT. CIE.—AGENT
ON THE 11TH MARCH 1929

BOMBAY CENTRAL

THE FOLLOWING MEMBERS OF THE STAFF & CONTRACTORS
WERE CONNECTED WITH THE CONSTRUCTION OF THIS STATION
SIR ERNEST JACKSON KT. CIE. AGENT.
C. W. M. COLLINS ESQ. DEPUTY AGENT
H. P. BALL ESQ. GENERAL TRAFFIC MANAGER.
H. B. COPLEY ESQ. DEPUTY GENERAL TRAFFIC MANAGER
E. S. SMITH ESQ. DISTRICT TRAFFIC SUPERINTENDENT
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Plaques affixed at Bombay Central Station to commemorate the twenty-first anniversary of its opening

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

CANADA

C.N.R. Diesel Freight Service

On October 1, after three months' trial service, the C.N.R. placed 14 twin-unit diesel-electric locomotives in daily freight service between Toronto and Winnipeg, and Montreal and Winnipeg. Each unit has a 1,500-h.p. engine. One of the diesel locomotives recently hauled an old wood-burning locomotive between Toronto and Richmond Hill, when the Post Office celebrated the centenary of the Canadian postal service.

As each diesel locomotive completes its run to Winnipeg, it is immediately turned round. The units end their run at Toronto at 9 p.m., and within the next few hours are again hauling freight trains to Montreal; on the next day they set out again for Winnipeg, thus completing a continuous circuit between the three cities.

The new service is expected to cut down operating costs considerably. For the past few months, the railway has been operating ten twin-unit diesel locomotives on freight service between Halifax and Montreal.

UNITED STATES

Long Island Reorganisation Plan

The Pennsylvania Railroad has filed with the Federal Court for the Eastern District of New York and the Interstate Commerce Commission a plan for the reorganisation of the Long Island Rail Road. The New York State Public Service Commission would not have power to establish fares on the Long Island. The President of the Pennsylvania Railroad has said that the plan provides for private ownership, managed in the public interest. Although the line is privately owned it has been " so shackled by the public regulatory and taxing authorities that it has been rendered incapable of paying its own way."

Most of the Long Island passengers are paying far less than the cost of providing the services. Athough fares are about sufficient to maintain the present level of services they do not provide earnings to buy new material. If the company were self-supporting, such needed improvements could be financed by new capital.

MEXICO

Renewals in Monterrey

It is stated that the National Railways budget for 1952 will include $20,000,000 pesos (about $2,315,000) for renewal work on the Monterrey division. It is planned to substitute 85 lb. rail for the 50 lb. rail now used. Other work includes the construction of a 42-km. line between Rio Bravo and San Fernando and the replacement of all wooden bridges in the districts of Nuevo Laredo, Matamoros, and Saltillo. Two repair yards, one exclusively for the repair of diesel locomotives operating in the Monterrey-Gulf divisions and the other for the repair of steam locomotives used on other divisions of the central and southern systems, are to be built.

SPAIN

Main Line Service via Tarragona

At present direct trains between Barcelona and Madrid travel between Reus and San Vicente de Calders *via* Roda. There is also a line from Reus to San Vicente *via* Tarragona, and it is proposed to divert main trains to this section which is better graded and enable them to serve the important city of Tarragona. All the lines concerned are at present single track, but the Reus-Tarragona section is being doubled.

TURKEY

State Railways Traffic

The working receipts of the State Railways in 1950 totalled £T. 182,082,000, and the number of passengers carried was 58,000,000, while there was a slight drop in the volume of goods conveyed compared with 1949, the total being 8,211,000 *tonnes*. The average passenger journey fell to 65 miles, against 74 in 1948. The average haul per *tonne* of goods increased to 224 miles from 214 in 1948.

Agricultural produce and primary commodities form the bulk of the goods conveyed. The highest tonnages were of coal, sugar beet, wheat, and chrome ore, in that order; there were also heavy tonnages carried of mineral oil derivatives and ores other than chrome.

IRELAND

Ulster Senate and G.N.R.(I.)

The Leader of the Ulster House, in closing the debate on the arrangement between the Governments in Northern Ireland and the Republic of Ireland for taking over the G.N.R.(I.), said that the cost of maintaining the system up to the time the proposed joint board came into being would be £300,000, of which Northern Ireland would bear 60 per cent. and the Republic 40 per cent. There was some argument on the valuation of the company, and on the proposal that the works would remain in Dundalk.

G.N.R.(I.) Bill not yet Ready

Mr. Sean Lemass, Minister for Industry & Commerce in the Republic, has told the Dail that he cannot yet indicate when legislation for the acquisition of the G.N.R.(I.) jointly by the Governments of the Republic and of Northern Ireland will be introduced.

Under the agreement between the two Governments the financial results of operating the company would be apportioned on the general basis that, except for an unecomonic service specially required by one Government only, profits and losses attributable to the operations in each area should accrue to or become the responsibility of the Government of that area. If the continuance of an uneconomic service was required by one Government only, that Government would assume financial responsibility for the losses involved.

C.I.E. Superannuation Fund

The Minister for Industry & Commerce has made an order bringing into operation on November 29 the C.I.E. superannuation scheme, 1951, which will affect clerical, supervisory, and executive staff who joined the company on a permanent basis from January 1, 1945.

A former fund, of which salaried staff of the Great Southern Railways were members, was closed in January, 1945, to new members, but contributors before this date are still paying into it, and will do so until they retire. More than 1,400 employees are in this fund, which is now worth over £1,250.

Between 600 and 700 employees will benefit by the new superannuation scheme which consists of (*a*) contributions of members; (*b*) contributions of the Board; (*c*) interest, dividends or other income from the investments and property of the fund; and (*d*) other sums which may be paid to the trustees from time to time.

FRANCE

Sleeping Car Fare Reductions

Subject to approval by the Minister of Transport, the S.N.C.F. intends to reduce the sleeping car fares of passengers who have made ten journeys by sleeping car in six months. The reduction will be 15 per cent. for the eleventh and twelfth journeys, rising progressively to 75 per cent. for the 25th and 26th journeys.

S.N.C.F. Lottery Bonds

The S.N.C.F. has issued a loan redeemable in five years. The issue, now in progress, is in the form of lottery bonds guaranteed by the Government and bearing interest at 4 per cent. The bonds of fr. 5,000 are issued at par. The prizes, drawn quarterly, will be travel coupons. For each draw there will be 50 prizes each authorising a journey of 5,000 km. first class, 500 prizes for 3,000 km. second class, and 5,000 prizes for 1,000 km. third class. The coupons will be accepted in payment for ordinary railway tickets for travel in France. Those holding winning bonds continue to take part in future drawings.

Modernised Marshalling Yard at Toton—4*

Layout of the sorting sidings, and the provision of new structures and main-line signalboxes

THE leads into the 37 sorting sidings are designed to equalise as far as practicable the track resistance to wagons running from the hump, and to avoid appreciable differences in distance therefrom to the physical clearance point at the entrance to the sidings. Apart from a connection immediately on the descent side to facilitate liberation of train engines, the first split is at the king points, the next two at queen points, and the next four (beyond the retarders) at jack points. From there the sidings diverge into fans of eight, ten, ten and nine respectively.

The two fans nearest the main line, generally referred to as the west yard, are classified to receive wagons to be made up into trains mostly for the West of England; the longest siding holding 79 wagons and the shortest 63. They converge in proximity to a connection with the main line, which affords a convenient egress for the west, controlled from a main-line signalbox known as Toton Junction. At this point, a main-line junction diverges to the south over goods lines, and it is with these running lines clear of the junction referred to that the outlet from the two outermost fans, known as the east yard, connects, under the control of Toton East Junction signalbox. In this instance physical considerations allowed sorting sidings of greater length to be laid down, the longest holding 110 and the shortest 82 wagons.

As a result, trains for the West and South of England, respectively, which are in about equal proportions, can depart independently of one another. Between the diverging and converging ends, all 37 sidings are laid dead straight. Other connectional and subsidiary flat-shunting facilities are provided at the outgoing ends of the respective fans, but physical limitations precluded the incorporation of groups of departure lines.

In between the main split at the departure end of the yard is the British Railways district wagon repair shop and sidings, which have been there many years and, except for modernising the serving arrangements, are the only part of the old layout at the Up side at Toton that was not destroyed under the main scheme. It was considered unnecessary to transfer this elsewhere, as any benefit derivable from additional marshalling yard facilities rendered possible by using the space liberated, would hardly have been commensurate with the additional cost involved, and the dislocation of repair arrangements.

The 37 sorting sidings are numbered from the main-line side, and are classified to receive wagons for the destinations, marshalling yards, or routes shown in the schedule below:—

Number of siding	Capacity. Wagons at 20 ft. over buffers	Toton Up yard Sidings classification
		WEST SIDE
Fan-1		
1	79	Long Eaton
2	79	Foleshill Gasworks
3	73	Birmingham, Windsor Street Gasworks
4	73	Western Region *via* Gloucester
5	68	Westerleigh, Bristol
6	68	*Via* Wichnor, excluding Stafford & Salop
7	69	Derby St. Mary's, Ripley & Wirksworth branches and stations to Darley Dale
8	69	Chaddesden, Water Orton & N.S. line
Fan 2		
9	66	Holwell
10	65	Birmingham, Nechells Gasworks
11	63	Washwood Heath, front fan
12	63	Beeston
13	69	Washwood Heath, back fan
14	69	*Via* Banbury
15	70	*Via* Bordesley
16	70	Birmingham, Saltley Gasworks
17	76	Burton & Exchange
18	76	Branston Exchange
		EAST SIDE
Fan 3		
19	110	District wagon repair shop
20	92	Eastern Region *via* Nottingham
21	95	Lloyds, Weldon & Corby
22	94	Leicester Exchange
23	87	Leicester Humberstone Road
24	87	Leicester Aylestone Road Gasworks
25	88	Wigston, including K.I. coke
26	86	Toton Down yard
27	82	Kettering Exchange, excluding K.I. coke
28	82	Wellingboro'
Fan 4		
29	89	Lillie Bridge
30	89	Bletchley Exchange
31	85	Rugby Exchange
32	85	Northampton Exchange
33	93	Watford Exchange
34	93	Willesden High Level
35	97	Willesden Low Level
36	102	Chilwell group for subsidiary shunting
37	102	Eastern Region *via* Peterborough

Up to the time of writing this article, the highest number of wagons which has passed over the hump in 24 hr. is just over 3,900. The maximum permissible loading for an outwards train varies according to the class of locomotive and route to be traversed, and the actual loading depends, of course, on the traffic available, but, taking the 37 sidings, the average throughput on the day in question was at least 100 wagons a siding.

A detailed plan of the layout in the railbrake and point area is given in Fig. 13, and the layout at the outgoing ends of the east and west sides, respectively, can be followed from the single-line diagram Fig. 4 given earlier.

East Side

The east side affords a spacious layout on the flat for any necessary secondary shunting and train engines backing in at the departure end, the new bridge which it was necessary to construct over the River Erewash being designed sufficiently wide to accommodate three tracks spaced 10 ft. clear of each other and the bridge parapets, so giving good visibility for hand signals to engine drivers.

The Chilwell group of seven dead-end sidings deals with traffic requiring to be shunted, or sectionised, for destinations other than those shown in the above quoted sidings classification. In addition, three long sidings are incorporated for holding any traffic for the south direction, which cannot be forwarded currently. It will be noted that there is a group of seven short dead-end sidings just south of the River Erewash, spaced 18 ft. apart. This small fan was designed in the way shown to give adequate room for light repair work on wagons undertaken by wagon repair firms at this yard, and who co-operated in providing and siting cabins for their employees to a uniform type and layout. The site they formerly occupied was in the way of the new hump and railbrake area, and the new location is handy for road access and well clear of yard operations.

West Side

The design of the outgoing connections with the running lines and the shunting facilities at the west side in comparison with those at the east side is unavoidably restricted, due to lack of space. Conditions are eased compared with the old layout, where the outlet from the whole of the Up yard was concentrated in this area, whereas practically one-half (the east side) of the sorting sidings now converge and connect with the running line at an entirely separate point.

Wagons to be repaired at, and those conveying material for, the British Railways wagon shops, run from the Up hump on to No. 19 siding (known as the shop runner). At specified times they are drawn off the south end of that road by a locomotive and placed in one or other of the inspection and marking sidings. After the necessary examination of the extent of repairs required, they are drawn off at the south end by an engine and placed on the input roads. From there they are drawn by capstan on to the traverser and fed into the appropriate shop lines at the north end of the shop, and are turned out at the opposite end of the shop, after repairs have been effected, on to the output roads. At suitable times they are taken away by a locomotive.

The structures previously in existence were numerous and comprised a mixture of brick or timber cabins, huts, old carriage bodies, and so on, many of which were in poor condition. Without exception, all were either no longer necessary, or had to be replaced in altered form at fresh locations; each one stood in the way of the new layout. The opportunity was taken not only to provide structures up to modern standards,

* Previous instalments of this article appeared in our issues of November 16 and 23, and December 7

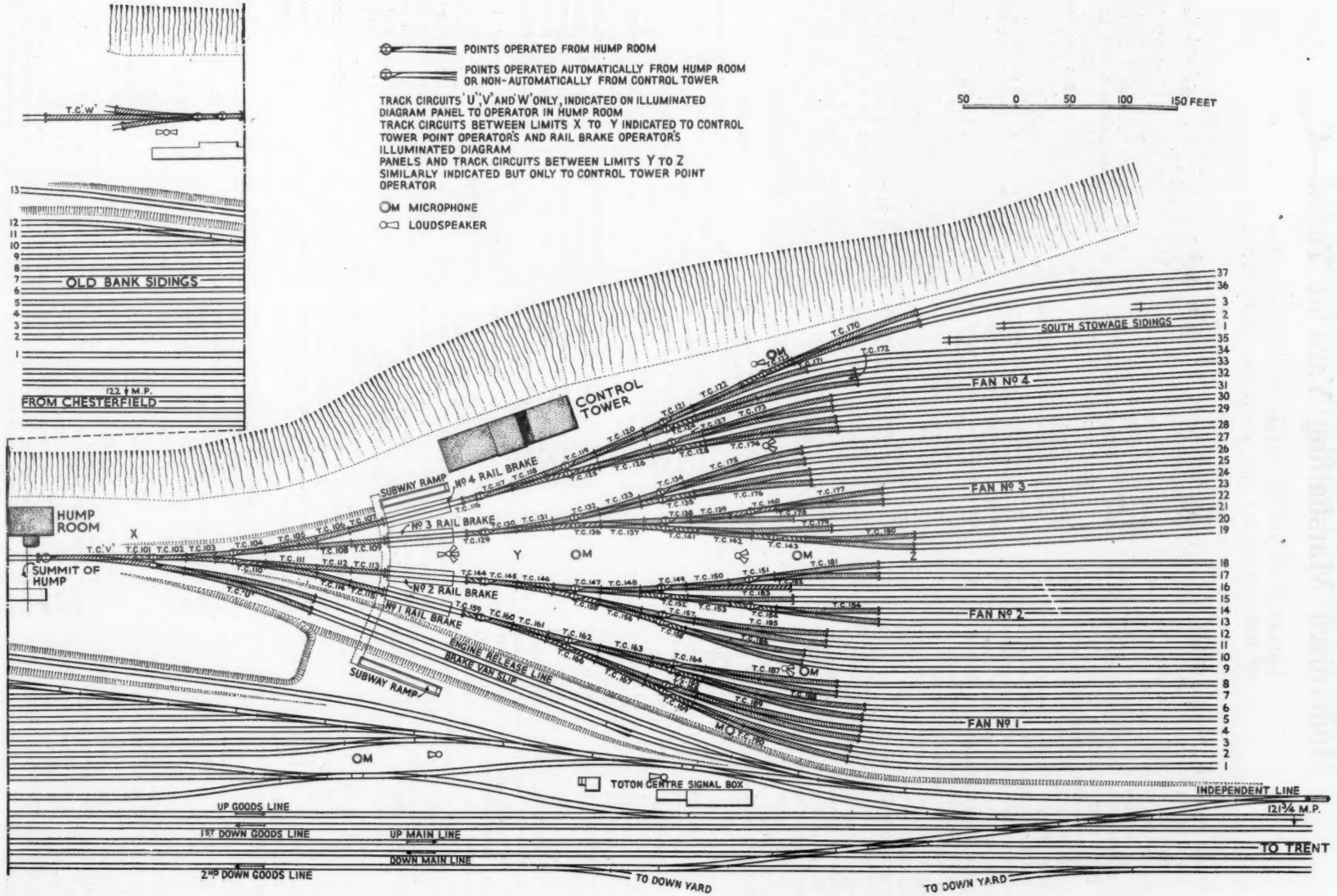
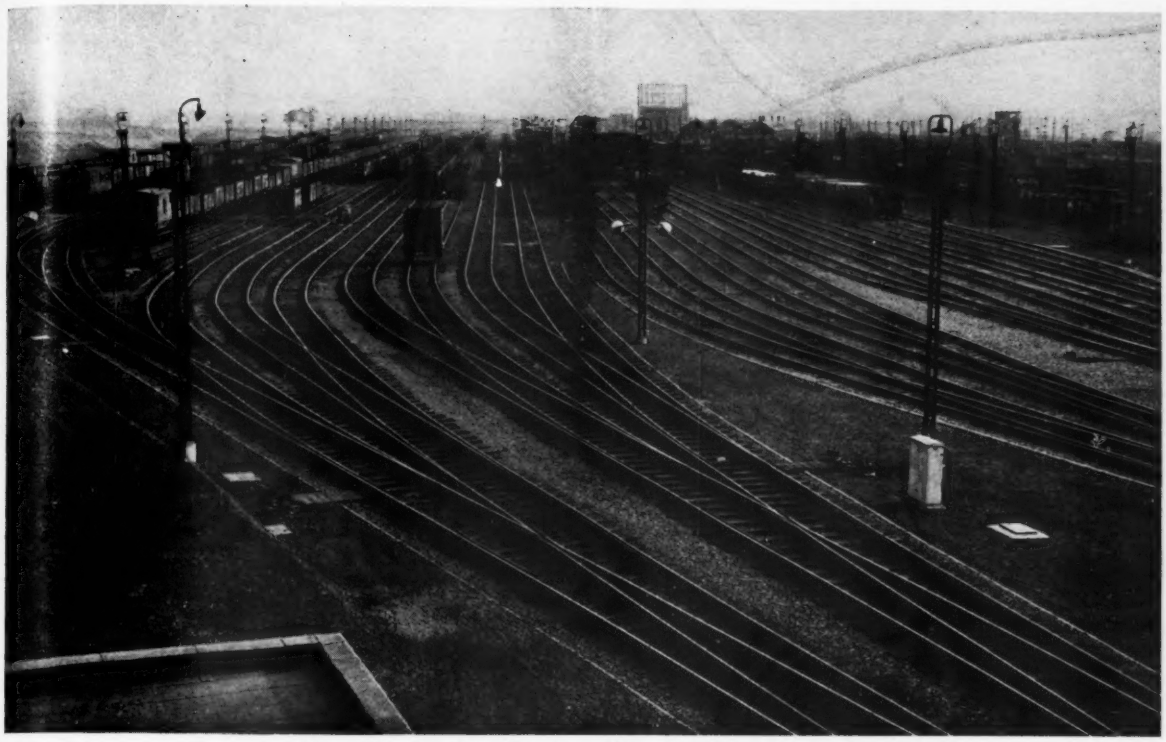

POINTS OPERATED FROM HUMP ROOM
POINTS OPERATED AUTOMATICALLY FROM HUMP ROOM OR NON-AUTOMATICALLY FROM CONTROL TOWER
TRACK CIRCUITS 'U', 'V' AND 'W' ONLY, INDICATED ON ILLUMINATED DIAGRAM PANEL TO OPERATOR IN HUMP ROOM
TRACK CIRCUITS BETWEEN LIMITS X TO Y INDICATED TO CONTROL TOWER POINT OPERATOR'S AND RAIL BRAKE OPERATOR'S ILLUMINATED DIAGRAM
PANELS AND TRACK CIRCUITS BETWEEN LIMITS Y TO Z SIMILARLY INDICATED BUT ONLY TO CONTROL TOWER POINT OPERATOR
OM MICROPHONE
LOUDSPEAKER
50 0 50 100 150 FEET
OLD BANK SIDINGS
122¼ M.P.
FROM CHESTERFIELD
CONTROL TOWER
HUMP ROOM
SUMMIT OF HUMP
SUBWAY RAMP
No 4 RAIL BRAKE
No 3 RAIL BRAKE
No 2 RAIL BRAKE
No 1 RAIL BRAKE
ENGINE RELEASE LINE
BRAKE VAN SLIP
SUBWAY RAMP
SOUTH STOWAGE SIDINGS
FAN No 4
FAN No 3
FAN No 2
FAN No 1
TOTON CENTRE SIGNAL BOX
INDEPENDENT LINE
121¾ M.P.
TO TRENT
UP GOODS LINE
1ST DOWN GOODS LINE
UP MAIN LINE
DOWN MAIN LINE
2ND DOWN GOODS LINE
TO DOWN YARD
TO DOWN YARD

Fig. 13—Layout in railbrake and point area, Toton Up yard



View of east side of sorting sidings from control tower

but to combine into as few blocks as possible, the accommodation for the yard operating staff and that of the various engineering departments.

The Yardmaster and the general depot clerical and time offices were not affected, as their accommodation already existed at the Down side of the line. The hump room and control tower have already been described and the work carried out is such that they should each be self-contained. One block for staff at the outgoing end east side has been provided, and at the west side, space limitations necessitated two smaller buildings. Adjacent to the latter area, in the wagon repair shop premises, a truck weighing machine has been installed, replacing one life expired.

There is a block on the opposite side of the humping line to the hump room, the rooms in which are allotted as

Outgoing end, east side, looking north

Outgoing end, east side, looking south, showing staff accommodation and brakevan ramp

Outgoing end, west side

under (reading from south to north):—

Operating equipment store
Oil & lamp room
Shunters' messroom
Central heating chamber and drying room
Wagon examiners' room
Wagon examiners' store
Lavatory
Permanent way store

The shunting staff accommodated in this block comprise those men engaged outside on chalking the siding numbers on wagons preparatory to humping, uncoupling engines and wagons, attending to brake vans, and so on, and accompanying yard engines for any exceptional movements.

A small building was necessary to house the shunters who work at the subsidiary group of flat sidings known as the Old Bank, between the Up arrival and the Up goods lines. A shelter is provided midway between Nos. 2 and 3 fan point areas just south of the rail-brakes, for use in inclement weather when traffic requirements do not call for the shunters who work in the point area to remain outside, yet are required to be available without delay for the next movement.

Apart from the main line signalboxes, the above are all the structures provided for the yard operating staff, and they are continuously occupied as the yard is open for 24 hr. daily on weekdays, and as necessary on Sundays. Mention has already been made of a Civil Engineer's district store at the Up side, which it was necessary to replace elsewhere. A new depot was constructed on land already owned at the Down side of the main line adjacent to Stapleford & Sandiacre goods yard, designed to modern standards and complete with rail and road access.

At the outgoing end of the East side of the yard, in addition to a new three-track bridge over the River Erewash, a new footbridge had to be erected immediately to the south, to carry the public right of way over the three lines in question. A number of essential miscellaneous structural items have been provided as necessary, for example, a relief trainmen's shelter as an annexe to one of the new signalboxes; cycle shelters, sand and salt bins, ash bunkers, and so on, are located at appropriate

Stapleford & Sandiacre signalbox. Main lines in front and entrance to Toton Up arrival lines in rear

points. Every effort has been made to plan and maintain a sense of general tidiness, including the disposition of such articles of permanent way and replacement equipment as it is deemed necessary to accommodate in convenient positions outside.

Signalboxes

The main lines through Toton comprise two Up and three Down running lines, which separate the Up and Down yards, and with the necessary connections in and out of these two yards at different points, the essential crossover facilities, the main line divergence to the south and west, respectively, at the south end and the existence of a large motive power depot at the Down side, the occupation of the lines is heavy. At the north end are the Stapleford & Sandiacre passenger and goods stations, siding connection with the engineers' depot; at the south end are the Long Eaton goods and coal yard, siding connection with the British Railways wagon shops, and with a repair site used by firms repairing privately-owned and ex-private owner wagons.

As Toton is a starting and terminating point for many long- and short-distance, coal, goods and empty wagon trains, train engine movements into and out of the motive power depot are very considerable. The amount of express passenger and fast - running traffic through Toton is small, compared with the slower movement of mineral and empty wagon trains and light engines. There is much movement of a general character, and so that operations affecting the main line at Toton can be undertaken closely and expeditiously, there are four main line signalboxes, Stapleford & Sandiacre, Toton Centre, Toton Junction, and Toton East Junction.

These four timber signalboxes were old and they, with their mechanical frames and some of their equipment, were almost due, or overdue, for renewal. It was desirable that the equipment of the signalboxes and the signalling worked from them should be brought more into line with present-day standards and practice. The positions occupied by the respective boxes were either unsuitable for the new connections with the Up yard, or they were in the way of the new track layout, and in each instance some enlargement was essential to accommodate the additional equipment necessary to provide improved safeguards. It was, therefore, decided to rebuild them in brick with ample glazing, modern fittings and amenities for the signalmen.

Except in the case of Stapleford & Sandiacre, where the new box was sited on the Up, instead of the Down, side, as hitherto, it was found possible to construct the other three on the same side of the line as before, and in close proximity to the old one each replaced. All four new boxes have mechanical frames which, with the instrument shelf, are on the side remote from the main line. This arrangement gives the signalman a better view of the main line and movements thereon, as compared with the old boxes, where the lever frames and signalling instruments were on the main line side.

The new signalboxes have central-heating by gas-fired boilers, thermostatically controlled, electric lighting and modern amenities for the signalmen. Both the erection of the new boxes and their equipping was carefully planned and timed to conform to the appropriate civil engineering stage, the interior and exterior work, including new signals and wiring, point rodding, track circuiting being advanced so that on one pre-determined Sunday, the connections with the old box were severed and the necessary connections coupled to the new box.

(To be continued)

Interior of Stapleford & Sandiacre signalbox. Main line side and train reporter's position to right of picture

Modernised Marshalling Yard at Toton—4

View from hump looking towards sorting sidings, showing illumination

Illumination as seen from control tower looking towards railbrakes and hump

Locomotives for the Gold Coast Railway

Required for mixed-traffic operating and designed to negotiate a minimum curve of 330 ft.

RECENTLY completed by the Vulcan Foundry Limited are thirty 3 ft. 6 in. gauge locomotives for the Gold Coast Government Railway. Built to the inspection of the Crown Agents for the Colonies, the engines are required for mixed-traffic operating, have a maximum axleload of 13 tons, and are designed to negotiate a minimum curve of 330 ft. The locomotives are a modern version of the "246" class engines supplied to the Gold Coast Railway by the same firm in 1939. The first two locomotives have been delivered and it is expected that the remainder will be in the Gold Coast before the end of the year.

Design Features

The boiler barrel is parallel with an approximate external diameter of 5 ft. and distance between the tubeplates is 16 ft. 5¼ in. An M.L.S. superheater supplied by the Superheater Co. Ltd. is fitted. There are 18 large tubes 5¼ in. outside dia., 8 s.w.g. thick, and 121 small tubes, 2 in. outside dia., 11 s.w.g. thick. The firebox is of the round-top type, with an inner firebox of copper; the first four rows of roof stays are of the sling type.

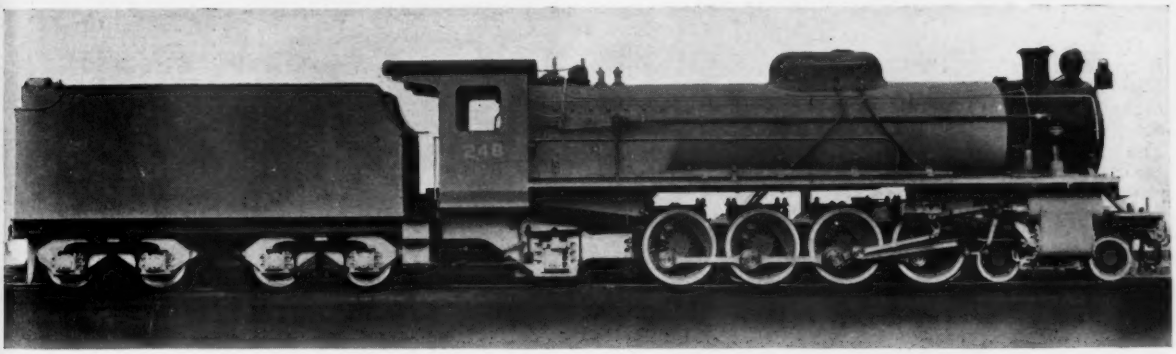
The firebox shell is stayed by horizontal cross-stays, and gusset stays are fitted at the smokebox tubeplate and boiler backplate. The firebox brick arch is carried on studs in the firebox sides. Washout facilities are provided by taper plugs fitted at the firebox bottom corners and at the bottom of the boiler barrel; all plugs are to the railway's standard pattern. A 4-in. Lockyer regulator is located in the dome. The working pressure is 200 lb. per sq. in.

The boiler mountings include a blow-off cock fitted above the foundation ring on the left-hand side, on which side also are two No. 9 live steam injectors to supply boiler feed to the clackboxes; two 3 in. Ross pop safety valves are fitted. The smokebox, which is cylindrical, is self-cleaning. The boiler and firebox is lagged with asbestos mattresses and fitted with crinoline bands on which mild-steel clothing sheets are secured by steel bands. A hopper type all-welded ashpan and a Hulson pattern firegrate are provided.

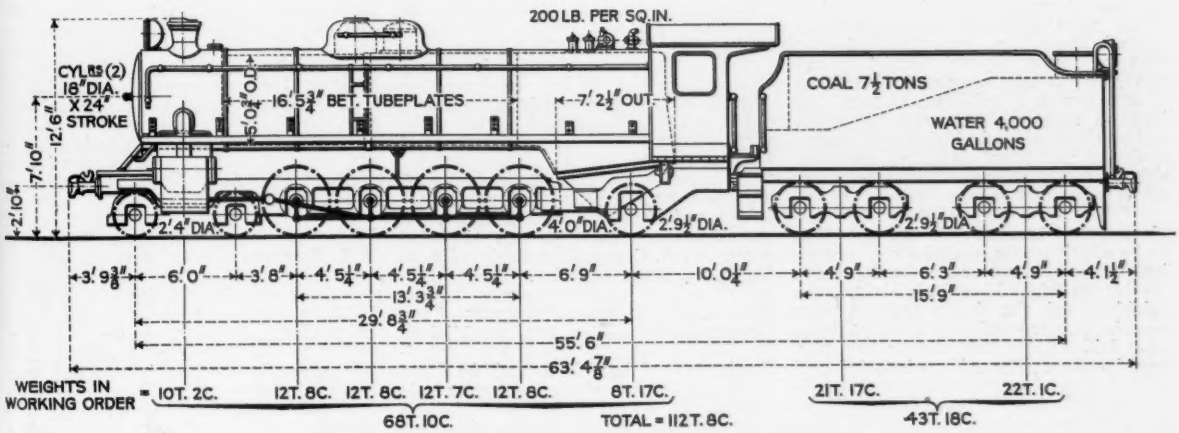
Engine and Tender Design

The engine frames are of the bar type, and in two pieces, joined behind the trailing coupled wheels. The distance between the rear frames is increased to suit outside hind truck bearings and radial axleboxes. The overhead spring gear is compensated in two groups, the leading, driving, and intermediate coupled making up the front, and the trailing coupled and hind truck making up the rear group.

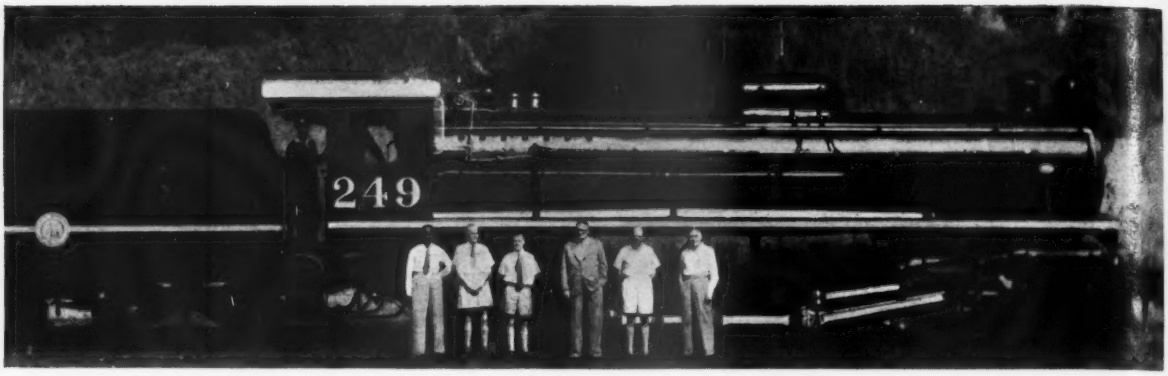
The coupled wheels are of cast-steel SCOA-P design; the coupled axleboxes being of the cannon type fitted with British Timken roller bearings. Manganese-steel liners are attached to the axleboxes and guides. The trailing truck has radial axleboxes equipped with British Timken roller bearings and the engine bogie axleboxes are of the same design as those fitted to the coupled axles.



Gold Coast Railway 4-8-2 *locomotive for mixed-traffic operating, having an axleload of* 13 *tons*



Principal dimensions and weights of the locomotive



Locomotive No. 249 ready for a test run on the Gold Coast Railway. Left to right: Messrs. F. A. Ashun, Locomotive Inspector; E. Turner, Technical Instructor; E. H. Spendlove, Senior Locomotive Superintendent; W. H. Salkield, General Manager; L. C. Gardner, Chief Mechanical Engineer, Gold Coast Railway; and Mr. A. W. Hill, Chief Service Engineer, British Timken Limited

Each cylinder is cast integral with half the smokebox saddle; the cylinder barrels are fitted with cast-iron liners. Trunk type piston valves are actuated by Walschaerts valve gear; by-pass valves are fitted on the steam chests. Britimp packing is provided for the piston rods. The coupling and connecting rod bearings are equipped with British Timken roller bearings. Laird type crossheads are provided, and the gudgeon pins are fitted with plain bearings.

Cylinder and steam chest lubrication is by means of a No. 7 eight-feed Wakefield mechanical lubricator. The engine brakes are steam operated and the tender and train brakes are vacuum brakes. The vacuum ejector is located outside the cab on the right-hand side of the boiler. Sanding is by gravity and is supplied to the front of the leading coupled wheels and to the rear of the intermediate wheels; the sandbox is on top of the boiler. The cab is to the railway's standard pattern and is provided with a double roof and an extended driver's platform.

The tender tank is of all-welded construction. The underframe is built of steel channels and sections, reinforced by steel castings at the front and rear and at the bogie centres. Visco No. 2 Alliance automatic couplers are fitted at the front of the engine and rear of tender. The tender bogies are equipped with British Timken roller bearings. Stone's electrical equipment is provided, and the turbo-generator is located on the firebox wrapper. Two locomotives are fitted for trial purposes with an electrical speed indicator supplied by J. Stone & Co. (Deptford) Ltd.

The principal dimensions are as follow:—

Cylinders, dia. and stroke	18 in. by 24 in.
Coupled wheels, dia.	4 ft.
Leading bogie wheels, dia.	2 ft. 4 in.
Trailing truck wheels, dia.	2 ft. 9½ in.
Tender bogie wheels, dia.	2 ft. 9½ in.
Heating surface :—	
Tubes	1,448 sq. ft.
Firebox	160 sq. ft.
Total evaporative	1,608 sq. ft.
Superheater	298 sq. ft.
Total	1,906 sq. ft.
Grate area	34 sq. ft.
Boiler pressure	200 lb./sq. in.
Tractive effort at 85 per cent. boiler pressure	27,500 lb.
Adhesive weight	49 tons 11 cwt.
Factor of adhesion	4·05
Weight of engine in working order	68 tons 10 cwt.
Tender coal capacity	7 tons 10 cwt.
Tender water capacity	4,000 gal.
Weight of engine and tender in working order	112 tons 8 cwt.

HOLIDAYS IN SCOTLAND AT AN INCLUSIVE CHARGE.—Many holidaymakers from the North of England are expected to travel in special trains next summer to spend a week or more in Scotland under an all-inclusive scheme prepared by travel agents in conjunction with British Railways. Every Saturday from June 7 until September 6 trains will leave Manchester and Sheffield for Scotland, stopping only at selected points to pick up holiday-bound passengers from linking-up areas. These holidays have been planned by the Creative Tourist Agents' Conference and British Railways to combine the maximum of interest with the minimum of cost. The inclusive charge covers return rail tickets and meals *en route* including tips, accommodation and board including gratuities, sightseeing excursions by steamer or motorcoach, and so on.

HADFIELDS LIMITED EXHIBITION.—The Duke of Gloucester opened a new centralised forge on November 8 at the East Hecla Works, Sheffield, of Hadfields Limited. An exhibition of the firm's products was staged. Two rows of stands, 100 yd. long, were laid out and erected in a bay of a machine shop. The exhibits included steel parts for metal extrusion presses and rolling mills; buckets and tumblers for dredgers; colliery equipment, and crushing machinery; locomotive castings and wheel centres; railway and tramway trackwork; rolled billets and bars; and forged and cast steel for many engineering uses. There were also a comprehensive selection of precision castings, and examples of methods used for the non-destructive testing of steel which are extensively used by the firm to develop and maintain high standards of manufacture.

PERMANENT WAY INSTITUTION, IRISH SECTION.—There was a large attendance at the meeting of the Irish section of the Permanent Way Institution held in the Conference Room of the Traffic Manager's Office, G.N.R.(I.), Belfast, on December 13. Mr. H. S. Cochrane, District Engineer, G.N.R.(I.), was in the chair. Permanent way officers from the G.N.R.(I.) and U.T.A. were present. A paper entitled "Curve Adjustment and Superelevation" was read by Inspector McIntyre, Banbridge, and illustrated by epidiascope. At the discussion the speakers included Messrs. T. A. Carson (Secretary) and R. T. Lloyd, and Inspector Quinn.

CLOSING OF AINTREE-SOUTHPORT LORD STREET BRANCH.—The London Midland Region announces that the Aintree Central-Southport Lord Street branch will be closed for passengers, parcels and passenger train merchandise on and from January 7, 1952. The following stations are affected: Sefton & Maghull; Lydiate; Altcar & Hillhouse; Woodvale; Ainsdale Beach; Birkdale Palace; and Southport Lord Street. Sefton & Maghull, Lydiate, and Woodvale will also be closed for freight traffic, for which alternative arrangements have been made.

REDUCED AIR FARES TO PARIS.—British European Airways and Air France together will introduce a new class of low-priced air travel between London and Paris. The new fares will cut by up to 40 per cent. the standard rates between the two capitals. The flights, which will be additional to the standard luxury services, will be made by aircraft of higher seating capacity. They will not include the price of road transport between city centre and airport, nor meals, but light refreshments will be served. The scheme is a step in the development of wider plans for the introduction of tourist class air services throughout Europe.

SOFTWOOD IMPORTS.—As from January 1, 1952, softwood buying overseas will be done by private traders, who were only partially responsible for imports in 1951. Total imports in 1952 will be limited to an amount necessary to maintain the present rate of consumption and to provide necessary commercial stocks. The present regulations regarding the acquisition and consumption of softwood will continue in force, but consumption licences will be issued every six months, instead of every quarter.

RAILWAY NEWS SECTION

PERSONAL

Mr. G. W. Forder, Assistant Carriage & Wagon Works Manager, Eastleigh, Southern Region, has been appointed Assistant Carriage & Wagon Engineer, Scottish Region, Glasgow.

Mr. W. Y. Sandeman, O.B.E., M.C., B.Sc., M.I.C.E., Civil Engineer, Scottish Region, who, as recorded in our November 30 issue, is retiring on December 31, served his apprenticeship with a firm of consulting engineers in Edinburgh. In 1913 he joined the North British Railway as an Assistant in the Maintenance Department and in 1915 was appointed an Assistant Engineer to the Port of London Authority. Later the same year he was Commissioned in the Royal Engineers and served in France till the end of the war. After demobilisation Mr. Sandeman returned to the service of the North British Railway as an Assistant in the Parliamentary & Constructional Department and in 1925 was appointed Assistant-in-Charge of that Department. In 1928 he became District Engineer, Northern District, Scottish Area, L.N.E.R., and in 1935 was transferred to Glasgow to take charge of the Western District. He was appointed Assistant to Engineer (General), Southern Area, L.N.E.R., in 1937, and in the following year became Assistant Engineer of that Area. In 1941 Mr. Sandeman was appointed Engineer, Scottish Area of the L.N.E.R., and also Engineer to the Forth Bridge Railway Company. On nationalisation Mr. Sandeman was appointed Civil Engineer, Scottish Region. He was responsible for repairing the flood damage to the East Coast main line between Dunbar and Berwick in 1948

Mr. W. Y. Sandeman

Civil Engineer, Scottish Region, who is retiring on December 31

Mr. Ian Robertson Frazer

Appointed Civil Engineer, Scottish Region, as from January 1, 1952

The Eastern Region of British Railways has announced the appointment of Mr. L. Harrison, Head of Canvassing & Development Section, District Goods Superintendent's Office, Sheffield, as Assistant to District Goods Superintendent (Mineral), Sheffield.

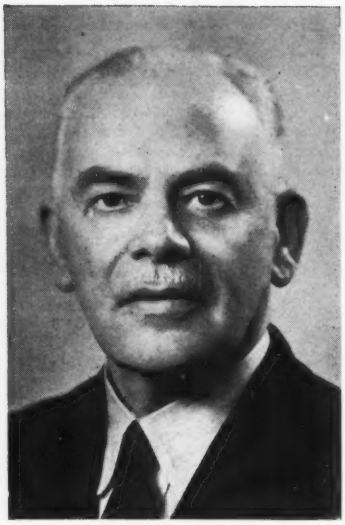
Mr. William M. C. Scott, Chief Controller, St. Rollox Control Office, Glasgow, Scottish Region, has been appointed Stationmaster, Glasgow (Central).

The Railway Executive has announced the following appointments.—

Mr. J. H. Fraser, Signal & Telecommunications Engineer, York, to be Chief Officer, Engineering (Signal & Telecommunications), Railway Executive headquarters, London, in succession to Mr. H. H. Dyer, who is retiring on December 31.

Mr. W. J. Garrod, Chief Clerk, Mineral Section, Commercial Superintendent's Office, Paddington, to be Assistant to Executive Officer (Mineral Traffic), Commercial Department, Railway Executive headquarters, London.

Mr. Ian Robertson Frazer, B.Sc., M.I.C.E., Assistant Civil Engineer, Scottish Region, who, as recorded in our November 30 issue, has been appointed Civil Engineer, Scottish Region, as from January 1, 1952, was educated at the Royal High School, Edinburgh, and at Edinburgh University, where he obtained the degree of B.Sc. Engineering with special distinction in engineering design. He entered the service of the Caledonian Railway in January, 1914, under the late Mr. Dugald McLellan, at that time District Engineer, Southern & Eastern District. Mr. Frazer served overseas with the Royal Engineers, 52nd Division, from 1915 to 1920, latterly on the Palestine Military Railway. He was demobilised with the rank of Captain, and returned to railway service in Edinburgh. In 1923, he was appointed an Assistant Engineer in the New Works Department of the Divisional Engineer, L.M.S.R., Glasgow, and in 1926 became Senior Assistant Engineer in the South Western district. In 1933, Mr. Frazer was asked to carry through job analysis investigation in Scotland. The following year he was appointed Assistant to the District Engineer, Derby (South), and he became Acting District Engineer in 1939. He returned to Scotland in 1940 on appointment as District Engineer, Inverness, and in 1941 became District Engineer, Perth. In 1945, he was appointed Divisional Engineer, Glasgow, and in 1947, Engineer (Scotland),



Mr. G. R. Dalgleish

Appointed Assistant Stores Officer, Scottish Region

Mr. W. R. Mosby

Appointed Assistant Signal Engineer, North Eastern Region

Mr. W. N. Smith

Appointed Assistant (Steelwork), Civil Engineer's Office, Eastern Region

L.M.S.R. On nationalisation Mr. Frazer became Assistant Civil Engineer, Scottish Region. He was a part-time member of the Committee reporting on Glasgow & District Transport under the Chairmanship of Sir Robert Inglis.

Mr. G. R. Dalgleish, Divisional Storekeeper, St. Rollox, Scottish Region, who, as recorded in our November 16 issue, has been appointed Assistant Stores Officer, Scottish Region, was educated at Kilmarnock Grammar School and Kilmarnock Academy and began his railway career in the Stores Department of the Glasgow & South Western Railway at Kilmarnock in 1910. After gaining experience in all phases of Departmental Storekeeping and stores purchasing, Mr. Dalgleish was transferred to St. Rollox in 1928. He assisted in the co-ordination of the Caledonian, G.S.W.R., and Highland systems of storekeeping after the 1923 grouping and at the present time he is actively concerned with the merging, on a Regional basis in Scotland, of the storekeeping arrangements and practices of the former L.M.S.R. and L.N.E.R. Mr. Dalgleish was Assistant Divisional Storekeeper, St. Rollox, until his appointment in 1949 as Divisional Storekeeper, St. Rollox Division. During the first world war he served overseas with the Gordon Highlanders.

Mr. J. C. Campbell, Chief London Representative of Keith Blackman Limited, has retired and has been succeeded by Mr. D. J. Auld, who has been a representative for the past 27 years, including service in Manchester.

SOUTHERN RAILWAY ASSOCIATION

The annual Dinner of the Southern Railway Association, which was formed on the absorption of the Southern Railway into British Railways, was held at the Charing Cross Hotel on December 12. Colonel Sir Eric Gore Browne, the last Chairman of the company, was in the chair, and among those present were Sir Francis Dent; Sir Eustace Missenden, the last General Manager of the company, and later Chairman of the Railway Executive, and Mr. John Elliot, Chairman, Railway Executive.

Mr. W. R. Mosby, M.I.R.S.E., Indoor Assistant to Signal & Telecommunications Engineer, North Eastern Region, who, as recorded in our November 23 issue, has been appointed Assistant Signal Engineer, Signal & Telecommunications Engineer's Office, began his railway career as a junior draughtsman in the Signal Engineer's Department of the North Eastern Railway at York in 1907. He was placed in charge of the interlocking section in 1936, and became Chief Designer in 1940. On the formation of the Signal & Telecommunications Engineer's Department in 1948 he was appointed Indoor Assistant. Mr. Mosby has been associated with various advances in signalling such as schemes for the amalgamation of signalboxes, and the introduction of power signalling and relay interlockings, including the recently-installed York resignalling scheme.

Mr. Robert Gillies, Goods Superintendent at Glasgow (Buchanan Street), Scottish Region, is retiring on December 31.

Dr. L. J. Haydon, Medical Officer, Southern Region, who is A.D.M.S. 1 AA Group, has recently been awarded the Territorial Decoration with clasp.

Mr. J. Griffith Hall, Director & Secretary of Westinghouse Brake & Signal Co. Ltd., has been appointed to the board of Westinghouse Garrard Ticket Machines Limited.

The following notification appeared recently in *The London Gazette* under the heading of Regular Army—Supplementary Reserve of Officers, Royal Engineers :—

Captain P. R. Dashwood, B.Sc., to be Major, November 25, 1951, with seniority October 1, 1950.

LONDON MIDLAND REGION APPOINTMENTS

The London Midland Region of British Railways has announced the following appointments:—

Mr. H. D. Watt, Assistant District Engineer, Manchester, to be Assistant District Engineer, Derby South.

Mr. F. C. Williams, Goods Agent, Stoke-on-Trent, to be Assistant to District Goods Superintendent, Warrington.

Mr. W. N. Smith, an Assistant in the Steelwork Section of the Civil Engineer's Office, Eastern Region, Kings Cross, who, as recorded in our November 23 issue, has been appointed Assistant (Steelwork) in the same office, is an Associate of the City & Guilds Institute (Finsbury). He joined the railway service as an Assistant in the bridge section of the L.N.E.R. Headquarters Staff in 1927, since which date he has been engaged on the design of bridges and other structures. From 1939 onwards he has been responsible *inter alia* for the route availability of engines and the conveyance of heavy loads by rail and road. During the recent world war, whilst Mr. Smith was stationed at Peterborough, he served with the Railway Home Guard at that place.

Mr. Justice J. D. Kearney has succeeded Mr. Justice M. B. Archibald as Chief Commissioner, Board of Transport Commissioners for Canada.

We regret to record the death on November 30, at the age of 55, of Mr. J. McChesney, Manager of the Hyde Park Works of the North British Locomotive Co. Ltd.

We regret to record the death on December 12, at the age of 60, of Mr. Rowland Hill, Manager of the Newcastle-on-Tyne office of Thos. Cook & Son Ltd.

The Norwegian Ambassador, Lord Leathers, Secretary of State for the Co-ordination of Transport, Fuel and Power, and Lord Hurcomb, Chairman of the British Transport Commission, were guests at a reception given at the Norwegian Club, on December 17, by the Bergen Line to celebrate that company's centenary.

Dean & Dawson Limited has recently announced that the following appointments have been made :—

Mr. A. W. Cooke as London District Manager.

Mr. P. O'Brien as Branch Manager of the 81, Piccadilly, W.1, office.

Mr. E. W. H. Locke as Branch Manager of the 163, Fenchurch Street, E.C.3, office, following the retirement of Mr. H. Gregory.

Paris Metro Rubber-Tyre Coach

The R.A.T.P. (Regie Autonome des Transports Parisiens) is conducting trials on the disused Porte des Lilas—Pré Saint-Gervais section of the Paris Metro on a motor coach fitted with pneumatic tyres. The coach is 50 ft. long and was built in the Metro workshops at La Villette. It runs on rubber-tyre wheels fitted outside flanged steel wheels, in a manner quite different from the system used in the Michelin rubber-tyre main-line stock running in regular service on the French National Railways between Paris and Strasbourg.

The rubber tyres, which raise the flanged wheels slightly above the steel rails, rest on timber longitudinals, laid outside the rails and parallel to them. The sharp curves on the Metro ruled out the multiplicity of axles of the Michelin system, making it necessary to resort to large-tread road-type tyres to obtain the supporting area required to carry the weight. Though friction is thus increased, this is regarded as an advantage, allowing more rapid acceleration and deceleration, of particular value on lines with short distances between stations.

Lateral Guides

The longitudinals, which later may be replaced by concrete, are flanked by ordinary flat-bottomed rails laid on their sides a little above the level of the road-bed; the under side of these acts as a lateral guide to rubber-tyre guide wheels mounted horizontally in front of and behind each bogie.

The flanged wheels do not touch the rails unless a tyre is deflated, when a lamp lights in the driver's cab and the coach or train is run to the next station. When the train is shunted on to another line, the guide wheels cease to function and the flanges come into play.

The coach is driven by two Alsthom 130-h.p. electric motors in series suspended beneath the coach body and supplied with d.c. current at 600 V. Power is transmitted through cardan shafts to the axles. Braking is by motor rheostats and air brakes. Electro-acoustic equipment announces the name of the next station through loudspeakers above the coach doors. The prototype coach weighs 19 *tonnes*, against 40 *tonnes* of existing motor coaches. At starting acceleration is 1·2 metres per sec. per sec., and in braking deceleration is 1·4 metres per sec. per sec., or in emergency 2 to 3 metres per sec. per sec.

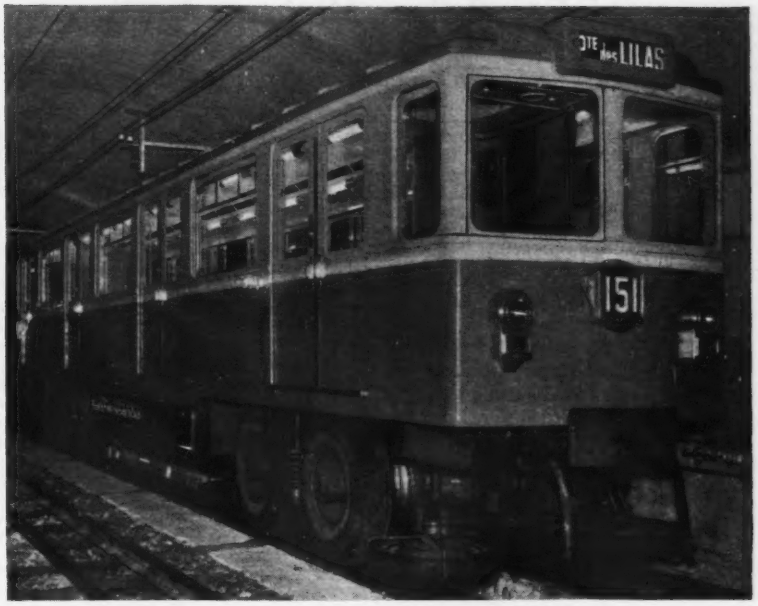
Extended Trials

Trials will continue for several months. If they prove satisfactory the R.A.T.P. will be able to build light coaches effecting considerable economies in electric power as well as conducing to smooth and silent running. Forty units of this type are under construction and are expected to effect a saving of 30 to 40 per cent. in weight in comparison with the existing Metro rolling stock.

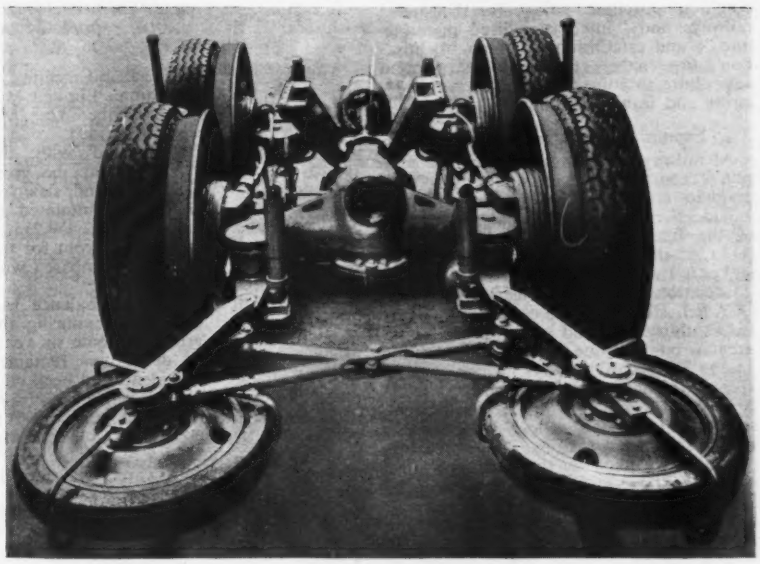
Tests were made at Porte des Lilas on November 14 in the presence of many transport officials. Lord Latham, Chairman, and Messrs. J. Cliff, Deputy Chairman; A. H. Grainger, Member; and F. G. Maxwell, Operating Manager (Railways), London Transport Executive, accepted invitations to attend.

The first of the new Metro three-car articulated trains was also on view at Porte des Lilas. They consist of six instead of five coaches. The train is made up of two independent sets, automatically coupled or uncoupled instantaneously. Each set comprises three bodies mounted on four articulated bogies, thus saving weight; two of the four bogies are motor driven. In the slack hours, uncoupled units are to run as independent short trains giving quick service. On each side of the unit set are eleven wide sliding doors, closing automatically and opening easily, thus saving time in entry and exit. The weight of the two coupled three-car sets is only 108 *tonnes*, in comparison with 140 *tonnes* in the present five-coach non-articulated trains.

The construction of new rolling stock, including buses, forms part of a renewal plan approved by the Office Regional des Transports Parisiens. The plan provides for the replacement in ten years of all the rolling stock placed in service before 1914 on the Metro, and for modernisation of the bus fleet; it comprises 100 trains and 2,000 buses.



Experimental rubber-tyre coach on the Paris Metro



Close-up of bogie, showing lateral guide wheels in foreground

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BRITISH STANDARD FOR STEEL SPRING WASHERS.—A new British Standard (B.S. 1802:1951) covers requirements for spring washers for general use. An endeavour has been made to include a range of sizes which will suffice for general industrial use and cover most ordinary requirements and at the same time limiting the number of different sectional sizes to stock. Although the emphasis is on dimensions, clauses on suitable material, heat treatment, hardness testing, and related manufacturing items are included. Copies may be obtained from the Institution.

O.E.E.C. Railway Mission to U.S.A.

Study of American methods of inter-railway co-ordination and standardisation of practice

On the invitation of the Economic Co-operation Administration, the Organisation for European Economic Co-operation in 1950 sent to U.S.A. a mission composed of 82 railwaymen from twelve European countries, including the United Kingdom, France, and Germany, which remained in U.S.A. from September 9 to October 21. Delegates were divided into eight functional groups, and were asked to consider themselves "not as representatives of their own countries, but as European railway experts."

Problems at Governmental Level

The mission, whose report is in process of publication, considered both general and technical questions, the latter being the subject of detailed reports by the eight functional groups. Among the broader problems considered are, at Governmental level: the need to make the railways self-supporting; the co-ordination of investment; clarity and uniformity in accountancy and financial statistics; the desirability of forming a Governmental agency on the lines of the U.S.A. Interstate Commerce Commission (I.C.C.); a common purchase policy for European railways and "internationalised manufacture"; and establishment of an organisation to enable trade, industry, and agriculture to voice their views on railway tariffs and traffic handling.

Expansion of U.I.C. Advocated

At railway administrative level, the mission's report outlines a far-reaching programme covering many points. These include the main theme, that the powers of the International Union of Railways (U.I.C.) should be much extended to make it the European equivalent of the Association of American Railroads (A.A.R.). The mission considers that the U.I.C. thus expanded could bring about greater co-operation and standardisation among European railways, which eventually would help to increase production in Europe. The U.I.C. would co-ordinate research and standardisation for European railways. Special stress is laid on the action to be taken by the U.I.C. to effect standardisation of rolling stock and signalling and permanent way equipment; this should be combined with a co-ordinated purchase policy and a pooling of orders to form "one single integrated market."

The formation is suggested of a "central bureau" for recording information on the movement of wagons over European railways, which should lead to more economical wagon user.

Tariff policy, the mission believes, should be co-ordinated by the expanded U.I.C. In addition, the U.I.C. should take steps to standardise financial and railway statistics on the lines of the I.C.C. and A.A.R.

Close relations should be fostered between the railways, as represented by the U.I.C., on the one hand, and manufacturers of railway equipment, railway users, and the general public on the other. In the manufacture of railway equipment, the report considers that the U.I.C. should work in close contact with manufacturers' associations. Railway users' associations, and those representing other forms of transport, commerce, and so on, should be kept in contact by the U.I.C. Finally, the railways' public relations should be developed on the lines followed in U.S.A.

Specialist Problems

The mission proposes that the U.I.C. be responsible for investigating specialist problems, including: standardisation of passenger rolling stock in matters such as air-conditioning, reclining seats and other features of American passenger vehicles, also stainless steel bodies, shock absorbers, and so on; standardisation of visual signals; the train-despatching system; seat reservation; American methods of maintaining rolling stock; standardisation of rail sections; rail metallurgy; cost of track maintenance; standardisation of costing methods; and compilation of a railway technical vocabulary.

The conclusions on action at Governmental level have been examined by the Inland Transport Committee of the O.E.E.C. Most of the conclusions call for action by the railways themselves; the report, therefore, has been sent to the U.I.C. with the request that the Union express an opinion on the recommendations affecting it directly. The U.I.C. has agreed to do so, and the General Managers of European railways met in Paris on December 10 to make a preliminary study.

The mission was headed by Mr. Klaas Vonk, a Director of the Netherlands Ministry of Transport. The British delegates included:—

Messrs. K. J. Cook, Mechanical & Electrical Engineer, E. and N.E. Regions, British Railways; R. F. Harvey, Chief Officer (Motive Power), Railway Executive; S. G. Hearn, Operating Superintendent, London Midland Region; A. Dean, Civil Engineer, N.E. Region; and A. S. Richardson, Chief Traction Projects Engineer, and W. H. Stonelake, Traction Engineer, the English Electric Co. Ltd.

Another mission, including Brigadier A. E. M. Walter, of the Ministry of Transport, and Mr. C. E. R. Sherrington, Director of the B.T.C. Research Information Division, is to visit U.S.A. in the Spring of 1952, to study the working of the I.C.C.

Peruvian Corporation Limited

Record net revenue balance, but profits still short of a reasonable return

The sixty-first annual general meeting of the Peruvian Corporation Limited was held in London on December 11. Mr. W. H. White, Chairman, presided.

In his statement circulated with the report the Chairman said that the gross revenue from the railways and steamers for the year under review amounted to £3,278,525 as compared with £2,459,235 in the preceding year. The net profit for the past year was £514,420, as compared with £180,430.

Although this net revenue balance was higher than that of any year during the past 20 years, nevertheless, some six years of interest on their debentures remained unsatisfied, and no dividend had been paid on the preference stock since 1930 and none on the ordinary stock since the formation of the corporation. Consequently, this figure fell short of a reasonable return on the loan and share capital invested in the railways.

It had been decided by the directors (with the sanction of the supervision committee) to pay on January 4, 1952, Coupon No. 112, due April 1, 1946, for 3 per cent. gross, thereby reducing the balance at net revenue to be carried forward and available for debenture service to £260,932.

Increase in Freight Carried

The total freight carried by the railways during the past year was 2,072,403 tons, against 1,928,811 tons, showing an increase of 143,592 tons, while the number of passengers increased by some 247,000 from 3,157,488 to 3,404,570.

This year they had received the full benefit of increases in their tariffs, but this had been offset to a considerable extent by further increases in salaries and wages to meet the increased cost of living, and correspondingly increased charges for social services, as well as larger provisions to cover the continued rise in prices of all materials required for the maintenance and operation of the railways.

Under the provisions of the moratorium scheme the supervision committee had extended the expiry date of the scheme to December 31, 1952.

As previously stated, the directors were determined not to attempt to formulate a permanent scheme of arrangement with the debenture holders unless and until they could see, with reasonable certainty, that the corporation would be able to implement its terms and so avoid future default.

The results for the past year gave hope that the time for doing this was near. Unless, therefore, there should be a setback due to unforeseen causes, either of a national or international character, the directors (in conjunction with the supervision committee) hoped to formulate a permanent scheme for submission to the debenture holders and the stockholders some time next year—that was when the probable course of business for the current year could be assessed.

With continued developments in Peru's large mineral and other resources, it would seem reasonable to expect that the corporation's gross revenue would continue to increase, especially when additional rolling stock and equipment were brought into service to meet road competition more effectively. There must, however, be set against this the fact that costs of operation continued to increase and that, consequently, net revenue might suffer unless such increases in costs were met by higher tariff rates where the traffic could bear it.

The report was adopted.

ROD MILL GOES BY RAIL.—Special trains have been arranged by the Western and Eastern Regions of British Railways for the conveyance of a rod mill from the Castle Works of Guest, Keen & Nettlefolds Limited, Cardiff, to the works of John Lysaght Limited, Scunthorpe. The mill, which will provide a total load of between 600 and 700 tons, will be dismantled before the holidays, loaded into rail wagons, and despatched *via* Banbury by special trains on the mornings of December 27 and 30 and January 2.

New Wagons for Carrying Iron Ore

Side-discharge doors are operated throughout the train simultaneously by compressed air

A scheme developed by the Tyne Improvement Commission and the Consett Iron Co. Ltd. for handling some 1¼ million tons of iron ore a year from boat to wagons by means of special equipment called for a train capable of simultaneous discharge at Consett. British Railways therefore designed a special type of wagon for the purpose and 30 of them are being built at Shildon. The first wagon has been completed, and was inspected at Marylebone goods yard on December 10 by Mr. John Elliot, Chairman, and Mr. R. A. Riddles, Member, Railway Executive, and other British Railways officers. The first train is expected to run in the Spring.

Power and Hand Brakes

The wagons are fitted with power and hand brakes and power-operated side-discharge doors capable of being worked simultaneously through the complete train by compressed air from the footplate of the engine. It was agreed by the Civil Engineer that for the special working on this section of the line a load on rail of 20 tons per axle could be allowed. The principal dimensions of the new wagon are as follow:—

Length over buffers ...	36 ft. 5 in.
Length over headstocks	33 ft.
Extreme height ...	10 ft.
Extreme width	8 ft.
Wheelbase of bogies ...	5 ft. 6 in.
Centre of bogies ...	21 ft.
Size of journals ...	12 in. by 6 in.
Capacity	1,046 cu. ft.
Load	50 to 56 tons according to grade of ore
Tare	28 tons 13 cwt.

The body, which is in two halves with a space between for the door engines, is part-welded and part-riveted. Corten steel has been used for the plating, the plates in the sides, ends, and doors being ¼ in. thick, and the hopper plates $\frac{5}{16}$ in. thick. This steel was chosen as able to stand up to the abrasive conditions and to resist atmospheric corrosion. There are four side discharge doors, suspended from hinges and suitably reinforced at the bottom edge to prevent distortion caused by impact during loading.

The hopper supporting frame is mounted on, and welded to, the underframe. Two 18-in. vacuum brake cylinders have been provided and give a brake power of 26½ tons. Buffing and drawgear follow as near to standard practice as possible. Each buffer has nine rubber buffing springs and one rubber recoil spring, and the drawgear which takes the pull immediately behind the headstock has four rubber springs. The two four-wheel bogies are each capable of carrying 35 tons on pivot, and follow in general principle the plate-type bogie developed by the Western Region.

Compressed Air Equipment

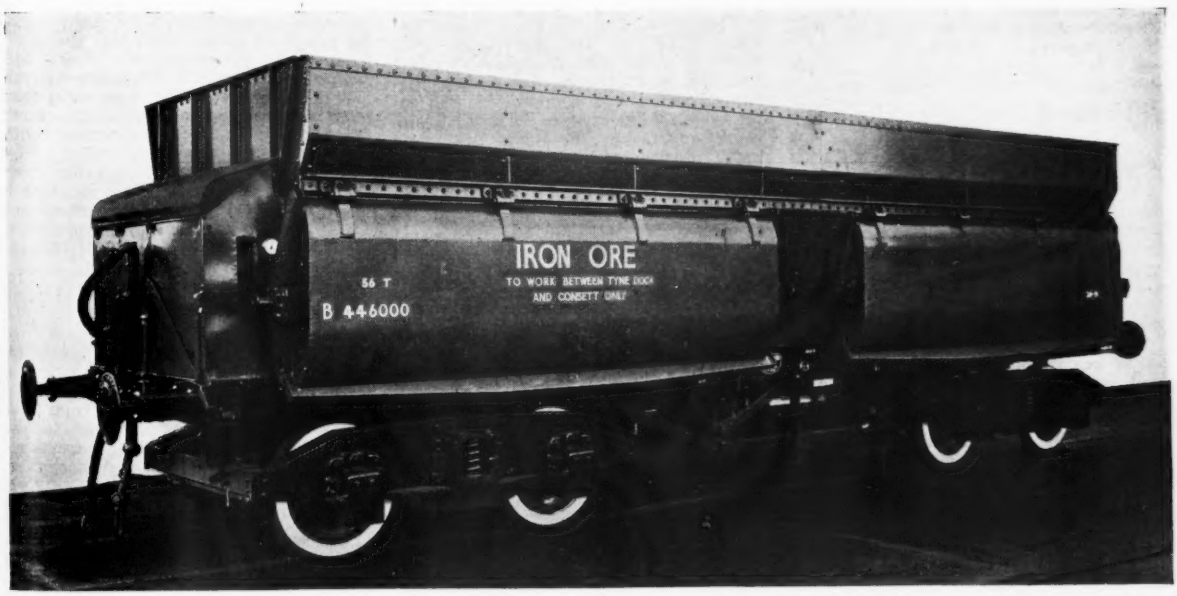
One of the major problems was the provision of suitable gear for the power operation of the side doors, as there was no suitable standard equipment in existence. Briefly, the arrangements consist of two cylinders mounted on a fabricated baseplate in the form of an inclined plane mounted so that they work in opposition to each other and obviate any tendency to shock-load the gear. Each cylinder has a piston with a stainless-steel hollow piston rod which fits on to a spigot on a triangular crosshead. This crosshead operates two fulcrum levers which in turn are connected to the rods which push the doors open and pull them shut. A shoe forms a lock to prevent accidental power operation during transit and the danger of twisting a pair of doors by accidental non-operation of one mechanical lock has been obviated.

Four air reservoirs are situated on the underframe. Air at a pressure of 80 lb. per sq. in. is obtained from two compressors on the locomotive. Pressure for operating the doors is created during the working of the empty rake from the sidings to the loading bunker and also when proceeding back to the loading point. During this period the doors are manually controlled.

NORTH EASTERN REGION CHRISTMAS ARRANGEMENTS.—Relief trains run by the North Eastern Region at Christmas will total 335. Seats will be reservable on 70 relief trains and restaurant cars will be included on 22. One of 19 excursions run will be a dance special from Beverley to Hull, arranged by a ballroom manager to return 400 passengers to Hull at 1.30 a.m. after a Boxing Day dance. On New Year's Day buffet car trains will run from Newcastle and district to Edinburgh for the Powderhall Handicaps.

LEOPOLDINA TERMINAL CO. LTD.—The annual general meeting of the Leopoldina Terminal Co. Ltd. will be held at the Abercorn Rooms, London, E.C.2, on Thursday, December 27, 1951, at 11.30 a.m., for the purpose of receiving the report of the directors, electing a director, fixing the auditors' remuneration and transacting the ordinary business of the company. For reasons explained in the report of the directors the accounts of the company are not being submitted. The proprietors will accordingly be asked, after dealing with the above matters, to adjourn the meeting *sine die*.

TRAVEL BETWEEN GREAT BRITAIN AND NORTHERN IRELAND.—At a meeting of the Council of Management of the Ulster Tourist Development Association yesterday it was reported that because of the efforts of the Ulster Transport Authority some relaxation in travel regulations between Great Britain and Northern Ireland had been secured. As a result of negotiations with British Railways and the Home Office, individual members of organised parties travelling to Northern Ireland from Great Britain on day excursions would no longer require to have travel permits, but could obtain a combined travel ticket and permit.



One of thirty 56-ton steel wagons fitted with pneumatic doors which are being built by British Railways to convey iron ore from the Tyne to the steelworks at Consett

Farewell Function at Greenore for D.N.G.R. Employees

Thirteen members of the staff of the Dundalk Newry & Greenore Railway, each with over 40 years' service, were the guests of the directors at the Greenore Hotel recently. The occasion marked the last board meeting of the company, which is due to close at the end of this month. To commemorate the occasion each employee was presented with a medal struck to mark the centenary of the London & Birmingham Railway which in 1846 became part of the London & North Western Railway, the parent system of the D.N.G.R.

Before making the awards, Mr. E. S. Hunt, Chairman, said he was glad to meet the old, loyal servants of the company, although the occasion was marked with sorrow and regret at the passing of the railway. The uneconomic working of the railway, which had to be subsidised by British Railways for some years, was the cause of its closing. The L.N.W.R., of which the D.N.G.R. was part, ceased to operate as a separate entity in 1921, and the subsequent amalgamation led to the cessation of passenger services to Greenore in 1926, with the accompanying loss of revenue. Mr. J. C. Chambers, the General Manager, and Mr. A. H. Nicholson, Staff Assistant, had taken an active and personal interest in the disposition of the D.N.G.R. staff.

Link with British Railways

Mr. A. J. Broughton, Director, D.N.G.R., and Irish Traffic Manager, British Railways, Dublin, thanked the staff for loyal service both to the D.N.G.R. and the parent company. As Irish Traffic Manager for the past twenty years he felt particularly the breaking of the old link and, with his fellow directors, wished prosperity to the staff. Every possible step had been taken to make the lot of the staff as easy as possible in the circumstances.

After the presentation the recipients were entertained to lunch in the Hotel by the Directors. Guests included Dr. E. M. Finnegan, Carlingford, Medical Officer, D.N.G.R., C. Johnston, Catering Manager, Miss M. Halton, Supervisor, Catering Department, and Mr. W. A. Ryan, Publicity Department, G.N.R.(I.).

Unusual Drainage Along a German Railway

Near Kiel, the railway from Altona to Kiel cuts across a range of low hills formed by glacial deposits. There are cuttings about 30 ft. deep for nearly two miles. The construction of the line caused the watershed to alter, and a considerable flow of subsoil water from the slopes of the cuttings to be diverted towards the Baltic instead of the North Sea.

The ditch flanking the railway was secured against drifting sand by a sidewall and sole of sleepers, but was not wide enough for the unexpectedly great quantity of water intercepted; it was further narrowed by vertical parts of sleepers driven in to keep the horizontal sidewall sleepers in position and causing the water to form eddies at 8-ft. intervals. For this reason, and because of the slightness of the gradient, of 1 in 833, the flow of the water was impaired to the extent that the line tended to be flooded and the concrete structure of a nearby overbridge affected.

A pre-war scheme to construct a concrete drain pipe and another scheme, investigated after the war for a sump from which the water could be pumped to Kiel Harbour, both proved too costly. For economic reasons it was necessary to retain the curved alignment and comparatively slight fall of the existing ditch. After a detailed survey, it was decided to reconstruct the ditch in a form which would permit the continued use of the sleepers and also the use of old flat-bottomed rails. The rails were cut longitudinally just below the head and their lower parts bent to form U-shaped frames with unequal legs after the web had been cut in at the bends to permit bending. The frames were completed by a horizontal bracing at the top for which the heads of the cut rails were used.

These stiff frames held the sleepers in position to form the sole and sidewalls of the ditch. They were built in two standard sides, one 23⅝ in. wide, 29½ in. high on the side of the railway, and 39⅛ in. on the side of the slope, the other having the corresponding measurements of 39⅜, 39⅛, and 39¼ in. This design was considerably cheaper than any other especially as the sleepers could be re-used.

Ease of Maintenance

The construction did not give rise to particular difficulties except where drifting sand was encountered. The ditch was built during the summer of 1950, and has been perfectly satisfactory. A special advantage compared with concrete piping is the easy access for inspection, cleaning and maintenance. As any defective sleepers or frames can be easily replaced, the life of the structure is likely to be long.

Subsidy for Coras Iompair Eireann

Supplementary estimate of £2,230,000 voted to meet losses

The Dail passed on December 13 a supplementary estimate of £2,230,000 to cover the operating losses of Coras Iompair Eireann, which are expected to total £1,251,560, including expenditure on renewals and replacements, in the present financial year.

The board of C.I.E. sought financial assistance in August, when it estimated that its deficit for the year ending March 31, 1952, would be £1,400,000 and that £600,000 was urgently needed to meet immediate needs. As no provision was made in the annual estimate for any payment to the Board, the Board was authorised to borrow up to £500,000 in accordance with the Transport Act, 1950.

Rates and fares were increased on September 10 to the limit which the Board considered the traffic would bear. The additional revenue likely to accrue was expected to be £1,179,000 in a full year or only sufficient to enable the undertaking to maintain its operating costs even.

Mr. Sean Lemass, Minister for Industry & Commerce, told the Dail that he had asked C.I.E. to let him know what measures it had taken to reduce operating costs and what economies and reorganisation schemes it had in mind. He had not yet been able to examine in detail a previous proposal by the Board to impose heavy restrictions on private goods transport. To meet its deficit in revenue, the C.I.E. Board had asked for authority to raise new capital to the amount of £2,500,000. Of this sum, it was estimated that about £600,000 would be expended before the end of the present financial year, mainly for the purchase of diesel railcars, coaches, wagons and buses.

Provision of Uneconomic Services

In the debate, one deputy pointed out that C.I.E. had been subject to more industrial disturbance in recent years than any other undertaking in the country. As the national transport system, it could not operate on strictly commercial lines if compelled to provide services which no commercial undertaking would maintain.

Mr. Lemass, replying, said that the higher cost of wages and materials during this year was no more than offset by the increased rates brought into force in September. The scarcity of materials was seriously hampering the repairs and renewals programme of the Board. A recurrence of trade disputes, leading to stoppages of work, had been the chief cause of the loss of traffic, which was £1,400,000 on the railways, and £31,000 on the canals. The road services made a profit of £460,000 and the hotels one of £5,000.

The presence of many closed branch lines was damaging the prestige of C.I.E., and it had been decided to set up a board, representing all interests, to which C.I.E. could apply for an order to abandon these lines.

DERAILMENT IN BRAZIL.—Forty persons were killed and many injured when five coaches of a passenger train were derailed and overturned near Fortale on December 17.

INSTITUTE OF TRANSPORT, METROPOLITAN SECTION.—Mr. A. A. Harrison will read a paper on "Complimentary Use of Rail and Road Transport for Freight Traffic," at a meeting of the Institute of Transport, Metropolitan Section, to be held at 80, Portland Place, W.1, at 5.30 for 6 p.m. on January 7.

NEW STATION AT NEW BRIGHTON.—A new station at New Brighton, four miles from Port Elizabeth, South Africa, was opened on November 5. The reconstruction scheme includes the construction of a large marshalling yard, necessitating the diversion and quadrupling of some 3½ miles of the main line from near Sydenham and Zwartkops Junction. The yard is expected to be opened towards the end of 1952.

BIRMINGHAM SMALL ARMS CO. LTD. RESULTS.—The consolidated trading profit of the Birmingham Small Arms Co. Ltd. for the year to July 31 last increased from £1,125,859 to £2,109,922, after allowing for general charges including depreciation of £611,414 (£568,192) and debenture interest of £43,248 (£45,074). Dividends from trade investments and miscellaneous income credited £74,659 (£66,486), exceptional income £3,719 (£182,196), and income relating to previous years (net) £12,038 (£82,156), making a total of £2,200.338 £1,456,697). From this taxation absorbed £1,420,000 (£850,000), leaving a balance of £780,338 (£606,697). Profit retained by a subsidiary as capital reserve takes a further £94,139 (nil), leaving a net figure of £686,199 (£606,697). The ordinary dividend is maintained at 10 per cent.

Parliamentary Notes

Civil Aviation Plans

Lord Leathers (Secretary of State for Co-ordination of Transport, Fuel & Power) stated in the House of Lords on December 5 that the Government intended to give greater opportunities to private enterprise in air transport development, without impairing the competitive strength of B.E.A. and B.O.A.C. international air services. There were other ways of expanding air transport and these would be explored so as to provide the private companies with opportunities to play a valuable part.

While the whole position was being reviewed, Lord Leathers added, all existing associate agreements which come up for renewal would not be extended beyond March, 1953, and no new agreements would be granted beyond that date, because, at this stage, that might prejudice future development.

"The main policy of the Government," he said, "is a combination of public and private enterprise in whatever way is in the best interest of British civil aviation." There would be consultation with all concerned, including private companies, air corporations, and trades unions.

Closing of Branch Lines

Mr. James MacColl (Widnes—Lab.) on the motion for the adjournment of the House of Commons on November 30 raised the question of the closing of railway branch lines, in which, he said, the B.T.C. had been unimaginative, lacking in foresight, and unconstructive in its ideas. He gave some examples of B.T.C. failure to consult local interests and to ensure replacement of rail by adequate road passenger services. After enumerating the *desiderata* of passenger train services, which, he said, ought not to be withdrawn in view of inadequate roads and of the capital sunk in costly fixed railway installations, Mr. MacColl cited the S.R. London suburban services as an example of what could be done in the North. For country traffic he advocated rail buses.

Mr. Gurney Braithwaite (Parliamentary Secretary to the Ministry of Transport) said that with or without nationalisation the closing of branches would have been inevitable. If the railways had been originally laid down during the motor era, the branch lines as feeders for the main services would never have been constructed. As to overloading of bus services after withdrawal of passenger trains, Mr. Braithwaite said that careful inquiries showed very little evidence of it, mainly because the number of rail passengers had been extremely small before the trains were withdrawn.

The advantages of the diesel car, added Mr. Braithwaite, had been much over-estimated, in both operating and maintenance costs and the ability to give speedy service with frequent stops, compared with the steam push-and-pull unit. Diesel traction for branch lines was under consideration. In no case where a branch line had been closed would a diesel rail car have turned an unprofitable service into a profitable one.

Results of Closing Lines

The annual saving from closing lines and stations, said Mr. Braithwaite, was estimated at £800,000. He could not obtain the figure of coal saved, but it must be considerable. Action to close was taken only after the fullest local consultation, and it had never been necessary to reverse the decision of the Railway Executive to withdraw a branch service as a result of discussions with local interests.

Also there were the area consultative committees. The route and type of vehicles used for providing substitute passenger services had to be approved by the licensing authorities, who could not compel operators to provide new or augmented road services, but did draw attention to the need for adequate substitutes. Local authorities could make representations to the licensing authorities before a branch line was closed or afterwards, should the substituted service prove inadequate.

The policy of closing, he added, was right economically and indeed inevitable, but he assured Members that if they had any evidence that the alternative services were inadequate, the Minister hoped they would draw his attention to such defects.

Contracts & Tenders

The East African Railways & Harbours have placed an order with Beyer Peacock & Co. Ltd. for the supply of nine heavy Beyer-Garratt locomotives for operation on their 80-lb. rail sections. These new locomotives will have the 4-8-2 + 2-8-4 wheel arrangement and with a total weight in working order of 240 tons and a tractive effort at 85 per cent. boiler pressure of over 66,000 lb., will be the largest locomotives in the world for the metre gauge.

They have also ordered from Beyer Peacock & Co. Ltd. a further 16 "56" class locomotives, which are a development of the light type metre-gauge Beyer-Garratt. The locomotives are built to an axleload of 11 tons and have the 4-8-2 + 2-8-4 wheel arrangement.

The Railway Executive has placed a contract with R. Y. Pickering & Co. Ltd. for twelve composite brake non-corridor third class coaches. The order completes the 1952 carriage programme.

The Hunslet Engine Co. Ltd. has received from the New Zealand Government Railways an order for ten diesel-mechanical locomotives of 250 b.h.p. for 3-ft. 6-in. gauge lines with a maximum permissible axleload of 10 tons. They are to have Hunslet four-speed transmission, a top speed of 25 m.p.h., a starting tractive effort of 16,800 lb., roller-bearing axleboxes, and Westinghouse air brakes.

The High Commission of India is inviting tenders for the supply of locomotive boilers of various types. Further details are given under Official Notices on page 699.

The Board of Trade Special Register Information Service recently stated that the First Secretary (Commercial) at the British Embassy, Brussels, has notified the Commercial Relations & Exports Department that the Belgian State Railways have issued a call for tenders (No. 2652/467) for the supply of castings and foundings as per specification.

Tenders should reach the Societe Nationale des Chemins de Fer Belges, Direction du Materiel et des Achats, Brussels, before January 9, 1952. A copy of the tender documents in French is available for inspection by representatives of United Kingdom manufacturers at the Board of Trade, Commercial Relations & Exports, Department. A second copy is available for loan to United Kingdom manufacturers in order of written application to the Department. Reference CRE(IB)77773/51 should be quoted.

Notes and News

Vacancy for Junior Contracts Engineer.—Applications are invited for the post of junior contracts engineer, between 22 and 30 years of age, required by manufacturers of diesel-electric locomotives. See Official Notices on page 699.

Discussions on Road Transport with Minister.—Mr. J. S. Maclay, Minister of Transport, on December 12 met representatives of the Road Haulage Association. A statement issued afterwards said that the representatives put forward their views on the future of the road haulage industry in the light of the Association's published plans.

Engineers' Guild and Road Accident Inquiries.—The Honorary Secretary of the Engineers' Guild Limited in a recent letter to the Minister of Transport states that in the view of the Guild "the customary arrangements for the investigation of highway accidents are inadequate. . . . It has been the practice for many years to appoint an engineer to conduct inquiries into railway accidents. The technical considerations involved in highway transport are as complex and no less important than those pertaining to rail transport. It is submitted that only a professional engineer experienced in these matters is competent to appreciate fully the relevant facts revealed through the giving of evidence." The Guild strongly suggested that the person appointed to conduct the inquiry into the recent bus accident at Chatham be a professional engineer, experienced in highway and traffic matters.

G.N.R.(I.) Christmas Arrangements.—The G.N.R.(I.) will run more than 70 extra trains over the Christmas holiday period. They include many non-stop diesel and steam expresses between Belfast and Dublin and relief trains on the Londonderry, Enniskillen, and Cavan lines. Good use is being made of the diesel trains, especially for providing connecting services on branches. The busiest days are expected to be the Saturday and Monday before Christmas, and the usual services on the main and secondary lines will be augmented.

B.O.A.C. Profit in October.—The Chairman of British Overseas Airways Corporation, Sir Miles Thomas, announced recently that in October B.O.A.C. made an operating profit of £104,000 and had an overall surplus, after allowing for interest on stock, of £7,000, compared with an overall deficit of £231,000 and an operating loss of £89,000 in October, 1950. In the seven months April to October, 1951, he said, B.O.A.C. had made an operating profit of £1,078,000 and an overall surplus of £140,000, compared with an operating loss of £1,513,000 and an overall loss of £2,459,000 in the corresponding period last year.

L.M.R. Orchestral Society.—A high standard was attained in the 29th concert given by the London Midland Region Orchestral Society under the leadership of Mr. G. Ellmitt in Friends House, Euston Road, N.W.1, on Friday, December 14. Particularly during presentation of the fourth movement from Dvorak's "New World" symphony the orchestra, under the sensitive direction of Mr. John Grindley, showed its mastery over one of the most difficult feats of musical technique—the protracted crescendo with appropriate climax. An ambitious work well attempted

was Bloch's fine tone poem "Printemps." This difficult work was not only interpreted with real insight but received with enthusiasm. Solos of a high technical achievement included the first movements of Mendelssohn's Violin Concerto in E minor and Schumann's Concerto in A minor for pianoforte. Miss Pauline Ellmitt (violin) and Miss Mavis Ellmitt (pianoforte), in performing these solos, gave evidence of lively temperament too often absent or discouraged in this country. One was also pleasantly surprised to listen to pianoforte performances unmarred by excessive use of the sustaining pedal—a sin widely practised by far too many present-day professionals.

Third Class Seats in Corridor Trains.—Passengers booking seats in Manchester to London trains are to be given notices asking them to lift the arm-rests in third class compartments so as to make a fourth seat available when other passengers are standing. This has been arranged by the Railway Executive as a result of complaints from standing passengers. Those who refuse to co-operate, it was stated recently, would have their names and addresses taken and the Railway Executive would consider taking action.

Employment Figures for October.—Ministry of Labour returns show few changes in the employment situation during October. The engineering, vehicles, and metals industries gained 21,000 workers, and the "transport and communication" group lost 3,000. The total working population fell by 3,000 from 23,482,000 for September.

Heenan & Froude Limited.—At a meeting of the directors of Heenan & Froude Limited on November 13 it was decided to recommend a final dividend on the ordinary shares of 10 per cent. actual, less income tax, making with the interim dividend 15 per cent. for the year ended September 1 last. It was further resolved to recommend for approval at an extraordinary general meeting to be held on December 21 the capitalisation of £42,640 out of capital reserves and the distribution to the ordinary shareholders of 170,563 ordinary shares of 5s. each credited as fully paid up in the proportion of one new ordinary share for every eleven existing shares held.

Accident in Algeria.—Five passengers were killed and three injured when the Oran-Algiers express ran into a lorry at a level-crossing near Oran on December 11.

Liverpool Overhead Traffics.—During November there were advances in Liverpool Overhead Railway traffics in all but the first week, when receipts fell by £19 to £2,601. The largest increase was in the week ended November 18, and amounted to £328 at £2,784. At November 24 aggregate traffics were up by £6,578 at £126,906 for the current 47 weeks.

Paper on Bogie Design.—The Council of the Institution of Mechanical Engineers has extended an invitation to the Members of the Institution of Locomotive Engineers to attend a general meeting of the Institution of Mechanical Engineers at Storey's Gate, Westminster, S.W.1, on January 4, 1952, at 5.30 p.m., when Mr. W. S. Graff-Baker, Chief Mechanical Engineer (Railways), London Transport Executive, will present his paper "Considerations on Bogie Design, with Particular Reference to Electric Railways."

Accident to Dover-Dunkirk Train Ferry.—When the train ferry *St. Germain*, which collided with the Prince of Wales Pier, Dover, on December 11, as recorded in last week's issue, returned to Dunkirk, the Paris-London sleeping cars were unloaded by crane, as damage to her stern made it impossible for railway vehicles to be drawn off the tracks. Meanwhile, to maintain the service, it was arranged for four sleeping cars to run in the Paris-London service that night, December 11, and for the one sleeping car available in London to run from London to Paris. The French National Railways also arranged for four ordinary sleeping cars (not able to run on the ferry) and one ferry-type sleeping car to be available at Dunkirk on arrival of the night ferryboat from Dover; these five, with the one through sleeping car from London, accommodated passengers from London to Paris. During that day, the weather proved unfavourable to aircraft, and late that evening many air passengers presented themselves at Victoria for the "Night Ferry" service; special accommodation, therefore, was arranged in the boat trains from London to Dover and from Dunkirk to Paris.

Costa Rica Railway Co. Ltd.—Owing to the absence of remittances from the subsidiary—as a result of the high cost of the flood damage earlier this year—the half-year interest due January 1 next on the 6½ per cent. first mortgage debentures of the Costa Rica Railway Co. Ltd. cannot be paid. The arrears of interest in respect of the half-year to June 30, 1951, remain unpaid. The moratorium has been extended to July 1 next.

Belgian Steel Information Centre: Photographic Competition.—The Steel Information Centre for Belgium & Luxembourg, 154, Avenue Louise, Brussels, is organising an international photographic competition, open to all photographers. Entries must depict an application of steel, must be unmounted glossy prints 18 × 13 cm., and submitted by May 1, 1952. Artistry and technical interest will be taken into account in awarding three prizes, of Belgian frs. 2,500, 1,500, and 1,000.

November Trade Balance.—The visible external trade deficit for November (excess of imports valued c.i.f. over exports valued f.o.b.) was £75 million, against £117 million in October. The figures were not affected by the decision of the new Government to reduce certain imports. The deficit for November, 1950, was £13 million. The improvement over October and the average for 1951 to date (£101 million) was achieved partly by a further rise in the value of exports to a record high level and partly by a return in the value of imports back to their previous level after a large rise in October. Dollar exports in November were slightly down compared with October.

Eastern Region Christmas Traffic Arrangements.—Nearly 400 additional main-line trains will be run by the Eastern Region over the Christmas holiday period, December 19-28, with 86 trains on December 21. These will include trains between Kings Cross and West Riding, Newcastle, Edinburgh, and Aberdeen, between Liverpool Street and East Anglian stations, and between Marylebone and the Midlands and North. Refreshment car and seat reservation facilities generally will be maintained in the trains in which usually provided, and also available in some relief trains. On December 21, additional sleeping car accommodation will be provided from Kings Cross to Edinburgh and Aberdeen.

Scottish Region Safe-Driving Awards.—Of a total of 991 carters and motor drivers of British Railways in Scotland who have won safe-driving awards in the annual competition organised by the Royal Society for the Prevention of Accidents, no fewer than 166 drive in Glasgow. In

Mr. John Elliot, Chairman, and Mr. R. A. Riddles, Member, Railway Executive, inspecting the new 56-ton steel mineral wagon with compressed-air operated discharge doors designed and built by British Railways (*see article on page* 695)

OFFICIAL NOTICES

THE High Commission of India invites tenders for the supply of:—(Ref. S.3637/51) Group 3. 14×2′ 0″ and 2′ 6″ gauge locomotive boilers. (Ref. S.3694/51) Group 4. 35 Broad Gauge locomotive boilers of various types. Forms of tender can be obtained from the Director General, INDIA STORE DEPARTMENT, 32/44, Edgware Road, London, W.2, at a fee, which is not returnable, of 10/- per group. Tenders are to be delivered by 2 p.m. on 25th January, 1952.

JUNIOR CONTRACTS ENGINEER required by manufacturers of diesel-electric locomotives. Applicants should be between the ages of 22 and 30, with technical training to graduate I.E.E. or I.Mech.E. standard and preferably practical experience of an apprenticeship with Manufacturers of diesel-electric traction equipment. The post will involve the commercial and general technical aspects of diesel-electric locomotive manufacture and it will be an advantage if applicants possess previous contracts experience of this nature. Excellent prospects for man with personality and ambition. Applications in confidence to Box 309, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY SIGNALLING AND COMMUNICATIONS INSTALLATION AND MAINTENANCE. A practical guide, especially intended to help Signal Inspectors, Installers, Fitters, Linesmen, Draughtsmen, and all concerned with installing and maintaining Signal, Telegraph, and Telephone Equipment. 416 pp. Many illustrations. Cloth, 8s. By post 8s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

JUNIOR TRAFFIC OFFICIALS with railway traffic apprenticeship experience. Age about 25, single, required for service on railways in Peru and Bolivia. Apply to the Secretary of the PERUVIAN CORPORATION LIMITED, 144, Leadenhall Street, London, E.C.3.

JUST PUBLISHED.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

LOCOMOTIVE, Carriage and Wagon Senior Draughtsman, 30/35 years of age. Qualifications: Must have served a full general apprenticeship in an engineering workshop (preferably railway) and have had at least five years Drawing Office experience with some time in an executive capacity. A knowledge of Spanish an advantage. Future prospects. Apply to the Secretary, PERUVIAN CORPORATION LTD., 144, Leadenhall Street, London, E.C.3.

THE "PAGET" LOCOMOTIVE. Hitherto unpublished details of Sir Cecil Paget's heroic experiments. Eight single-acting cylinders with rotary valves. An application of the principles of the Willans central-valve engine to the steam locomotive. By James Clayton, M.B.E., M.I.Mech.E. Reprinted from *The Railway Gazette*, November 2, 1945. Price 2s. Post free 2s. 3d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

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TRANSPORT ADMINISTRATION IN TROPICAL DEPENDENCIES. By George V. O. Bulkeley, C.B.E., M.I.Mech.E. With chapters on Finance, Accounting and Statistical Methods. In collaboration with Ernest J. Smith, F.C.I.S., formerly Chief Accountant, Nigerian Government Railway. 190 pages Medium 8vo. Full cloth. Price 20s. By post 20s. 6d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

GLOSSARY OF WOOD. A technical dictionary for all associated with timber and its uses. Ten thousand terms about timber—the common and the little known, the old and the new. Ten thousand definitions covering the entire field of timber and its uses—growth, marketing, utilisation. The commercial timbers, their qualities and uses, tools and woodworking equipment, are all here explained simply, concisely and accurately. Illustrated by many clear line drawings. Price 21s. net. By post 21s. 9d. Tothill Press Limited, 33, Tothill Street, London, S.W.1.

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the staff canteen at Buchanan Street Goods Station on December 11, Mr. R. D. Linton, Chairman of the Junior Chamber of Commerce, presented awards. Mr. J. M. Fleming, District Goods Superintendent, and Mr. H. R. Statham, District Passenger Superintendent, Glasgow, were present.

French Railway Loan. — The French National Railways have announced the issue of a five-year loan. The new bonds of fr. 5,000 nominal, issued at par, will bear 4 per cent. interest free of taxes and their holders will also participate in quarterly drawings of prizes entitling them to travel free for a given mileage.

National Railways of Mexico.—Bondholders of the National Railways of Mexico who deposited under the 1922 agreement with the International Committee of Bankers on Mexico are informed, with regard to the cash distribution from funds in the hands of the committee, that much of the available funds remains unclaimed.

Certificates for Railway Commercial Subjects.—Prizes were presented on December 7 to 19 young railwaymen out of a total of 3,280 who took London Midland Region free courses on railway commercial subjects last winter and gained over 90 per cent. of marks in the final examination. The winners came to London from all parts of the Region to meet the Commercial Superintendent, Mr. A. E. Hammett, and to receive from him certificates and prizes.

Collision in Alabama.—Seventeen persons were killed and nearly 70 injured in the collision of two trains between Birmingham and Tuscaloosa, Alabama, on November 25. The accident occurred when the "Crescent," a streamlined train of the Louisville & Nashville Railroad ran into the "Southerner" of the Southern Railway. The "Southerner," which was travelling from New Orleans to New York, had been diverted to a loop to allow the southbound "Southerner" to go through. When it began to regain the main line the "Crescent," which was using the Southern Railway route because of damage to a bridge on its own, came round a curve at 65 m.p.h. It can into the locomotive of the "Southerner" and pushed it back 90 ft. The two coaches immediately behind the locomotive were telescoped.

Institution of Railway Signal Engineers.—At a meeting of the Institution of Railway Signal Engineers to be held at 6 p.m. on January 9, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, Mr. W. Owen will read a paper entitled "Special Signalling for Speed Restrictions."

British Railways Standard Locomotives for Scottish Region.—The first of the new British Railways mixed-traffic tank 2-6-4 Class "4" standard locomotives to be allocated to the Scottish Region, has arrived at Kittybrewster Motive Power Depot, Aberdeen, and will operate in North East Scotland in the near future. The engine, No. 80020, was built at Brighton Works, and is the first of eleven similar engines being constructed for the Scottish Region. Ten others of the same type for Scotland are to be built at Derby.

Scottish Christmas Travel Arrangements.—More than eighty additional Anglo-Scottish trains are being run between Thursday, December 20, and Monday, January 7. Thirty-eight will leave Edinburgh Waverley for Newcastle and other places on the East Coast route; sixteen from Glasgow St. Enoch for Leeds, Sheffield and the Midlands; and twenty-nine from Glasgow Central for London Euston. Additional through services to the South will also be run from Aberdeen and Dundee. Extra trains will also be run within the Scottish Region, for example between Glasgow and Edinburgh, Edinburgh and Dundee, and Glasgow, Perth, and Aberdeen.

Paraguay Central Railway Co. Ltd.—The report of the Paraguay Central Railway Co. Ltd., for the year ended June 30, 1951, shows gross receipts of Guaranies 11,201,292, an increase of G. 3,047,863. Working expenses rose from G. 6,835,645 to G. 9,655,170, giving a surplus on working of G. 1,546,122, compared with G. 1,317,784. After provision for exchange loss and fixed interest charges the debit balance on net revenue account is £174,274. The addition of the debit brought in, £400,614, gives a total debit balance of £574,888, less general reserve of £158,939. The increase in gross earnings arises mainly from higher tariff charges, and that in working expenses from wage increases decreed by the Government and from higher operating costs generally. Because of the heavy programme of expenditure on maintenance and renewals, the committee representing prior lien and "A" debenture holders has been asked to grant an extension of interest moratoria for a further year to January, 1953.

Butler Machine Tool Co. Ltd.—The directors of the Butler Machine Tool Co. Ltd. announce that the profit for the year before charging taxation was £58,354 against £63,283 for the previous twelve months. The profit after allowing for taxation was £20,305 as compared with £25,753 last year.

Increase in Road Casualties.—Casualties on the roads of Great Britain in October totalled 18,597, which figure includes 480 killed, and compared with October, 1950, there was a decrease of three killed, but an increase of 898 in the total. The number of child casualties as in several previous months was higher than a year ago. Casualties to child pedestrians increased by 34 to 2,330.

Scottish Motor Traction Co. Ltd.—The directors of the Scottish Motor Traction Co. Ltd. recommend that a dividend of 22½ per cent., less tax, be paid on the ordinary stock for the year to September 30 last. This compares with 12½ per cent. for the previous year when there was a special distribution of 33⅓ per cent., being one year of interest on the British Transport Stock then held, but subsequently distributed to shareholders on a basis of £4 of stock for each 5s. unit held.

East Kent Road Car Co. Ltd.—The report of the East Kent Road Car Co. Ltd., for the year ended September 30, 1951, refers to the continually increasing operating costs, which resulted in an increase in fares last July. The accounts show a net profit of £153,506 and £114,063 was brought forward from the previous year. General reserve takes £100,000. The directors recommend a dividend of 15 per cent., less income tax, on the ordinary stock for

the year, a dividend on the 6½ per cent. cumulative preference stock, and a bonus of 10 per cent. on the ordinary stock, leaving £101,600 to be carried forward.

Scottish Region Buffet Car Service.—On December 17 the Scottish Region of British Railways started a buffet car service on the 10.40 a.m. Inverness-Wick and 3.35 p.m. Wick-Inverness trains. The car operates in both directions between Inverness and Helmsdale and serves light refreshments in addition to *a la carte* meals. The facility is an experimental one and its retention will depend on the extent to which it is patronised.

East Yorkshire Motor Services Limited.—Mr. J. S. Wills, Chairman, at the 25th annual general meeting of the East Yorkshire Motor Services Limited on December 18, said that their operating statistics were not very different from those of the previous year. Mileage run at 9¾ million was 20,000 less, but the number of passengers carried increased by more than 1,000,000 to 33 million, which was a new high record. Operating revenue was up by something under 4 per cent., but expenditure including depreciation and taxes was 11½ per cent. more. The small increase in revenue was due partly to the larger number of passengers carried and partly to increased fares which were in operation during the last two months of the financial year. The substantial increase in expenditure was due to additional fuel tax, higher costs of labour, fuel, tyres, and almost all other materials used, and heavier charges for depreciation and taxation.

Forthcoming Meetings

Dec. 28 (*Fri.*).—Royal Society of Arts, John Adam Street, Adelphi, London, W.C.2, at 2.30 p.m. Dr. Mann Juvenile Lecture: "The Romance of the Railways," by Mr. C. Hamilton Ellis.

Jan. 2 (*Wed.*).—British Railways, Southern Region, Lecture & Debating Society, in the Clerical Staff Dining Club, Waterloo Station, at 7 p.m. Reunion.

Jan. 3 (*Thu.*).—British Railways, Southern Region, Lecture & Debating Society, at the Chapter House, St. Thomas Street, S.E.1, at 5.45 p.m. "Some notes on Current Collection Systems for Electric Traction," by Mr. H. H. Swift, Mechanical & Electrical Engineer.

Jan. 3 (*Thu.*).—British Railways, Western Region, London Lecture & Debating Society, in the Clerks' Dining Club, Bishops Bridge Road, W.2, at 5.45 p.m. "The Working of Special Traffic by Passenger Train," by Mr. R. J. Hill.

Jan. 3 (*Thu.*).—Institute of Metals, at the University, Edgbaston, Birmingham, 15, at 2.30 p.m. Informal discussion on "Tool and Die Materials for the Extrusion of Non-ferrous Metals and Alloys."

Jan. 4 (*Fri.*).—Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1, at 5.30 p.m. "Considerations on Bogie Design with Particular Reference to Electric Railways," by Mr. W. S. Graff-Baker, Chief Mechanical Engineer (Railways), London Transport Executive.

Jan. 5 (*Sat.*).—Electric Railway Society, at the Fred Tallant Hall, Drummond Street, N.W.1, at 3 p.m. "Pictorial Survey of the Electric Railways of Holland and Belgium," by Mr. G. W. Morant.

Railway Stock Market

Although holiday influences have restricted stock market business, a rallying tendency has developed, largely because of the end of the recent wave of selling, which took some British Funds to new low levels, including 3½ per cent. War Loan. The latter, after dipping below 80 and showing a yield of virtually 4½ per cent., rallied, and led an improvement in gilt-edged stocks which helped sentiment in markets generally. Various factors have contributed to the better tendency. In the first place, it is now being assumed that, for the present, a further increase in the Bank rate is very unlikely. The increase already made in the latter, combined with the Government's dearer money policy generally, including the restriction of credit facilities for non-essential purposes, and the fact that borrowing from the banks is becoming dearer, are all having the desired effect of beginning to check inflation. The result will not be apparent immediately; and if, in the future, more drastic measures are required, a further raising of the Bank rate will no doubt be made, though it is generally hoped in the City that this can be avoided.

Tightening of credit facilities by the banks means there will be less borrowed money financing business in stock markets, and because of this, it is unlikely that there will be any considerable revival of speculative activity on the Stock Exchange, at least for the time being. Nevertheless, after their recent heavy fall, prices are tending to respond strongly to a moderate revival of buying interest. This week, the gilt-edged market has to contend with the further issue of 3½ per cent. Treasury stock on account of compensation to former colliery owners. Most of this stock, it is assumed, will be sold, but now that the tendency in markets is better selling may be postponed until early in the New Year, when it is hoped that the rally in values will have made further progress.

Foreign rails have been only moderately active, though they took their cue from the better trend in markets generally. Antofagasta were wanted after their recent further reaction, and, at the time of going to press, the preference stock has firmed up to 70 and the ordinary to 17.

There has been a considerable business in Canadian Pacifics, which, after dipping further on disappointment with the unchanged dividend, attracted buyers again and rallied to $72½. After the dividend announcement they were down to $66½ at one time. The market believes there will be scope for considerable expansion in the company's investment income in 1952, and there seems no doubt that "Canpacs" will remain a lively and prominent market feature though they must tend to move closely with the general trend of New York.

Mexican Central "A" debentures have revived to 86. Peruvian Corporation stocks continued active following the recent annual meeting, where it was pointed out again that it is hoped to bring forward a scheme in 1952 to deal with the big arrears of debenture interest. The market assumes that at the same time the junior capital will be reorganised; but it is difficult to assess the value of either the preference or ordinary stock. The preference has been out of the dividend list ever since 1930, while there has been no payment on the ordinary since the corporation was formed in 1890. At the time of writing the debentures are changing hands around 70½, the preference are 9¼ and the ordinary 3¾.

Leopoldina stocks kept firm in anticipation of their pay-out distributions next year. The ordinary was 11, the preference 28, the 4 per cent. debentures 101¼ and the 6½ per cent. debentures 150½; while Leopoldina Terminal 5 per cent. debentures firmed up to 103½ and the ordinary units were 1s. 7½d.

United of Havana stocks remained depressed with the 1906 debentures at 16½. Manila "A" debentures at 76 and the preference shares at 7s. 6d. have been steady.

After their recent reaction, San Paulo 10s. units rallied a little to 14s. 6d. Nitrate Rails shares were around 24s. reflecting market hopes that the final pay-out for shareholders may be in excess of the 20s. which would accrue on the basis of the present value of cash and other remaining assets. White Pass Yukon first debentures were 28⅜.

Among road transport shares, West Riding eased to 43s., Southdown were 96s., and Lancashire Transport 53s. 9d. B. E. T. deferred stock came down to £430.

Locomotive building and engineering shares have also been firmer with Beyer Peacock 31s. 6d., Vulcan Foundry 22s. 6d. North British Locomotive 17s. 6d., and Gloucester Wagon 14s. Hurst Nelson were 56s. 6d. and Birmingham Carriage 37s. 3d. Charles Roberts kept at 23s. 3d. and Wagon Repairs 5s. shares at 10s. 9d.

Traffic Table of Overseas and Foreign Railways

	Railway	Miles open	Week ended	Traffics for week: Total this year	Traffics for week: Inc. or dec. compared with 1949/50	No. of week	Aggregate traffics to date: Total 1950/51	Aggregate traffics to date: Increase or decrease
				£	£		£	£
South & Cen. America	Antofagasta ...	811	7.12.51	162,290	+ 72,410	49	6,078,860	+ 2,693,956
	Costa Rica ...	281	Oct., 1951	c1,244,055	+ c228,863	18	c4,947,302	+ c586,239
	Dorada	70	Oct., 1951	36,894	− 515	43	361,117	− 30,116
	Inter. Ctl. Amer....	794	Oct., 1951	$992,854	− $18,705	43	$10,938,552	− $262,880
	Paraguay Cent. ...	274	7.12.51	G393,750	+ G114,396	23	G7,758,013	+ G3,117,701
	Peru Corp. ...	1,050	Nov., 1951	$7,902,000	+ $325,000	22	$40,800,000	+ $2,017,000
	" (Bolivian Section)	66	Nov., 1951	Bs.16,086,000	+ Bs.2,474,000	22	Bs.75,805,000	+ Bs.19,219,000
	Salvador	100	Sep., 1951	c115,000	+ c40,000	13	c381,000	+ c113,000
	Taltal	147	Nov., 1951	$2,177,000	+ $155,600	22	$10,120,000	+ $2,298,300
Canada	Canadian National†	23,473	Oct., 1951	18,728,000	+ 664,000	43	172,143,000	+ 21,892,000
	Canadian Pacific† ...	17,037	Oct., 1951	13,467,000	+ 1,218,000	43	1,218,000	+ 15,250,000
Various	Barsi Light* ...	167	Nov., 1951	37,957	+ 6,607	33	284,050	+ 48,667
	Egyptian Delta ...	607	10.4.51	17,513	− 267	4	17,513	− 267
	Gold Coast ...	536	Aug., 1951	220,509	+ 16,972	21	1,280,126	+ 109,832
	Mid. of W. Australia	277	Sep., 1951	62,508	+ 23,733	13	169,896	+ 59,039
	South Africa ...	13,398	10.11.51	1,939,379	+ 124,159	32	60,812,644	+ 7,031,271
	Victoria	4,744	Aug., 1951	1,931,917	+ 45,412	9	—	—

* Receipts are calculated at 1s. 6d. to the rupee † Calculated at $3 to £1